Vol. 1038 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

January 10, 1984

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. The search fee for the European Patent Office was changed as of Jan. 22, 1983 and was announced at 1025 O.G. 27 on Dec. 28, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	295.00
Basic Supplemental Fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Nov. 14, 1983. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,806,558, Re. S.N. 552,767, Filed Nov. 17, 1983, Cl. 525/198, DYNAMICALLY PARTIALLY CURED THERMOPLASTIC BLEND OF MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN PLASTIC, William K. Fischer, Owner of Record: *Uniroyal, Inc., New York, N.Y.,* Attorney or Agent: James J. Long, Ex. Gp.: 142

4,301,466, Re. S.N. 552,632, Filed Nov. 16, 1983, Cl. 358/13, FAST ACTING PHASE SHIFTING APPARATUS FOR USE IN DIGITAL SAMPLING SYSTEMS, Maurice G. Lemoine, et al., Owner of Record: *Ampex Corp., Redwood City, Calif.,* Attorney or Agent: Joel D. Talcott, Ex. Gp.: 231

4,353,512, Re. S.N. 553,015, Filed Nov. 18, 1983, Cl. 242/54R, APPARATUS FOR ROLLING CHAIN LINK FENCE, Herbert E. Rohrbacher, Owner of Record: *Inventor,* Attorney or Agent: Charles H. Schwartz, et al., Ex. Gp.: 245

4,363,385, Re. S.N. 551,359, Filed Nov. 14, 1983, Cl. 188/249, TRANSMISSION BRAKE BAND END CONNECTION, Alfred Schlanger, Owner of Record: *Inventor,* Attorney or Agent: Stephen E. Feldman, Ex. Gp.: 314

4,392,496, Re. S.N. 544,892, Filed Oct. 24, 1983, Cl. 128/423, NEUROMUSCULAR STIMULATOR, David J. Stanton, Owner of Record: *Medtronic, Inc., Minneapolis, Minn.,* Attorney or Agent: Robert J. Kepinski, et al., Ex. Gp.: 335

4,395,173, Re. S.N. 551,807, Filed Nov. 15, 1983, Cl. 411/387, DRILL SCREW WITH PROTECTIVE BURRS, Henry Anton Sygnator, Owner of Record: *Illinois Tool Works, Inc., Chicago, Ill.,* Attorney or Agent: Thomas W. Buckman, et al., Ex. Gp.: 351

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

National Inventors Day

The Patent and Trademark Office, the National Council of Patent Law Associations and the National Inventors Hall of Fame Foundation, Inc., will sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 11, 1984 from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 12, 1984 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days. Inventors will be inducted into the National Inventors Hall of Fame on Sunday, Feb. 12, at 2:00 p.m.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 10, 1984 at 5:00 p.m. The removal of all personal property from the Search Room would be appreciated.

GERALD J. MOSSINGHOFF,
Dec. 27, 1983. *Commissioner of Patents and Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Jan. 10, 1984

D. 270,609	4,384,112	4,402,376	4,410,758
4,288,574	4,385,606	4,404,013	4,411,286
4,347,165	4,386,210	4,405,519	4,411,329
4,350,469	4,387,209	4,405,857	4,411,640
4,352,958	4,389,408	4,406,258	4,411,682
4,354,152	4,390,055	4,406,339	4,412,360
4,354,881	4,391,923	4,406,651	4,412,824
4,356,004	4,393,687	4,406,734	4,412,863
4,359,456	4,394,613	4,406,941	4,413,664
4,361,960	4,395,276	4,407,390	4,413,850
4,363,332	4,395,613	4,407,542	4,413,984
4,365,130	4,395,885	4,407,599	4,414,077
4,367,160	4,396,476	4,407,898	4,414,203
4,370,670	4,396,589	4,408,037	4,414,262
4,372,941	4,397,351	4,408,229	4,414,362
4,378,506	4,397,354	4,408,476	4,414,991
4,380,026	4,398,522	4,409,229	4,415,882
4,381,923	4,399,142	4,409,737	4,416,856
4,381,993	4,399,220	4,409,838	
4,382,960	4,399,725	4,410,058	
4,383,495	4,399,823	4,410,149	

Disclaimers

3,962,048.—*Curtiss M. Gilbert, Richard A. Bemis* and *Norman D. Schulze*, North Adams, Mass. METHOD FOR FORMING A UNIFORM OXIDE FILM ON A VALVE METAL. Patent dated June 8, 1976. Disclaimer filed Nov. 14, 1983, by the assignee, *Sprague Electric Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8 and 9 of said patent.

4,275,844.—*William A. Grgurich, Albert B. Niles* and *Kenneth W. Updyke*, Peoria, Ill. FUEL INJECTION NOZZLE. Patent dated June 30, 1981. Disclaimer filed Dec. 1, 1983, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1, 11 and 12 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

JANUARY 10, 1984

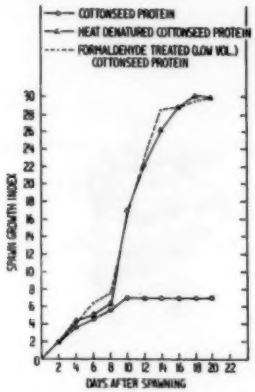
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

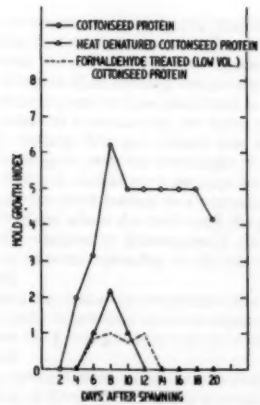
B1 3,942,969 (153rd)

DELAYED RELEASE NUTRIENTS FOR MUSHROOM CULTURE

Alban D. Carroll, Jr., Fleetwood, and Lee C. Schisler, State College, both of Pa., assignors to Research Corp., New York, N.Y.

Reexamination Request No. 90/000,305, Dec. 13, 1982.
Reexamination Certificate for Patent No. 3,942,969, issued Mar. 9, 1976, Ser. No. 471,893, May 21, 1974.
Int. Cl.³ C05F *5/00*; A01G *1/04*
U.S. Cl. 71—5





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

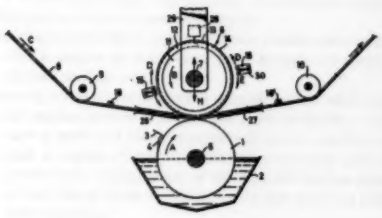
12. A growth medium for mushroom mycelium which comprises the admixture of a mushroom compost and a nutrient improving amount of a denatured protein.

B1 4,208,965 (154th)

METHOD FOR ELECTROSTATIC ASSISTANCE IN PRINTING PROCESSES, AND PRINTING MACHINES HAVING ELECTROSTATIC SUBSTRATE CONTACT PRESSURE

Helmut Eichler, Burgunderstr. 13, D-7601 Durbach, and Franz Knopf, Meister-Erwinstr. 18a, D-758 Bühl, both of Fed. Rep. of Germany

Reexamination Request No. 90/000,022, Jun. 30, 1982.
Reexamination Certificate for Patent No. 4,208,965, issued Jun. 24, 1980, Ser. No. 889,801, Mar. 24, 1978.
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713334; Apr. 7, 1977, 2715766
Int. Cl.³ B41F *5/04*; G05F *1/00*
U.S. Cl. 101—426



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **8**, **13**, and **15**, having been finally determined to be unpatentable, are cancelled.

Claims **1**, **9**, **16–19**, **21**, **23**, **24** and **26** are determined to be patentable as amended:

Claims **2–7**, **10–12**, **14**, **20**, **22**, **25**, and **27–29**, dependent on amended claims, are determined to be patentable.

New claims **30–33** are added and determined to be patentable.

1. Method for electrostatic assistance of the printing process in a printing machine, in which method a non-conductive printing substrate is passed between a printing cylinder coated with printing ink and a contact pressure roller which mechanically presses the substrate against the cylinder and which is

provided with an outer layer of material selected from the group consisting of non-conductive and weakly-conductive materials, during which procedure the application of a high d.c. voltage between the printing cylinder and at least one [of a plurality of point electrodes] *electrode arrangement* running in a longitudinal direction to the contact pressure roller results in electrons and ions being sprayed by corona discharge onto the surface of the contact pressure roller which, as a result of its rotating and its intrinsic conductivity, conveys these electrons and ions into the printing gap and enables them to flow off over this gap, characterized by *providing the electrode arrangement with a plurality of discrete electrode points longitudinally thereof, and* spraying the electrons and ions required per unit length of the printing gap and per second in order to achieve the desired printing result over the discrete electrode points distributed along the contact pressure roller and being acted upon by said d.c. voltage, in which process the current flowing to discrete groups of said electrode points is decoupled, and the current flowing through each electrode point in the case of a short circuit, is limited to a value which is less than the critical break-down current for the *atmosphere* [atomsphere] surrounding said machine, *and by keeping the surroundings of the points, except in the case of the contact pressure roller, free of conducting materials onto which the electrons and/or ions could flow.*

REISSUES

JANUARY 10, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

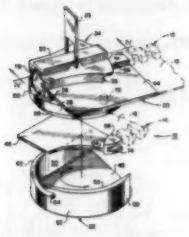
Re. 31,487
SLIDE FASTENER WITH IMPROVED END CONNECTIONS

Martin F. Friedberg, 13534 Preston Rd., Suite 206, Dallas, Tex. 75240

Original No. 4,326,319, dated Apr. 27, 1982, Ser. No. 82,727, Oct. 9, 1979. Continuation-in-part of Ser. No. 20,318, Mar. 15, 1979, Pat. No. 4,232,430, which is a continuation-in-part of Ser. No. 940,255, Sep. 7, 1978, Pat. No. 4,232,429, which is a continuation-in-part of Ser. No. 895,935, Apr. 13, 1978, abandoned. Application for reissue May 26, 1982, Ser. No. 382,170

Int. Cl.³ A44B *19/36*

U.S. Cl. 24—386 **12 Claims**



1. A device for connecting the ends of a separable zipper [of the type] having first and second rows of [teeth] *interlocking elements* disposed along [the] *respective* opposed [edges of supporting] stringers, [the device] comprising:

a slider [having top and bottom plates held in spaced-apart parallel planes by a center post, the plates having facing side rims defining first and second side slots through which the stringers pass, the front edges of the side rims defining first and second ports on opposite sides of the center post, the ports leading to a common passageway within the slider where the teeth are] *for* progressively [engaged] *engaging* or [disengaged] *disengaging said interlocking elements* depending on the direction of slider movement;

a base terminal disposed at the rearward end of the first row of [teeth and] *interlocking elements* adapted to carry the slider when the [rows] *interlocking elements* are [fully] disengaged;

a receiving terminal disposed at the rearward end of the second row of [teeth] *interlocking elements,* the receiving terminal including wall portions defining an aperture; and

first means [affixed to the bottom of] *carried beneath and integral with* the slider, said means being insertable into the aperture in [the] *a* direction generally perpendicular to [said parallel planes] *the direction of movement of said slider along the interlocking elements* to [permit] *cause* the [ports of the] slider to [be aligned for receiving] *receive* the [rearmost ends of the rows of teeth] *interlocking elements* upon forward movement of the slider.

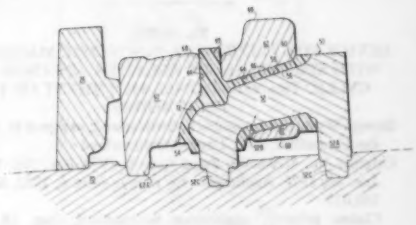
Re. 31,488
CASTING METHODS WITH COMPOSITE MOLDED CORE ASSEMBLY

David V. Trumbauer, Bremer, Iowa, assignor to Deere & Company, Moline, Ill.

Original No. 4,093,018, dated Jun. 6, 1978, Ser. No. 733,958, Oct. 19, 1976. Application for reissue Jun. 2, 1980, Ser. No. 155,194

Int. Cl.³ B22C *9/04*

U.S. Cl. 164—32 **16 Claims**



10. A method of casting metal castings comprising the steps of:

fabricating a composite core assembly by

molding a destructible layer of cellular plastic material such that a surface of said plastic layer includes an irregular surface portion; and

forming a core in encompassing relation around said irregular surface portion of said plastic layer by blowing a mixture of sand and binder around said surface portion, such that a surface of said core intimately contacts and conforms to the configuration of the irregular surface portion of said plastic layer to interlock said core and said plastic layer together;

forming a mold cavity within a pair of mold sections;

inserting said core assembly as an integral unit within one of said mold sections;

securing said mold sections together; and

introducing molten metal into said cavity to destroy said plastic layer and form said casting.

Re. 31,489
SOLID STATE LITHIUM-IODINE PRIMARY BATTERY

Satoshi Sekido, Yawata; Tadashi Sotomura, Kashiwara, and Yoshito Ninomiya, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original No. 4,148,976, dated Apr. 10, 1979, Ser. No. 922,049, Jul. 5, 1978. Application for reissue Sep. 11, 1981, Ser. No. 301,367

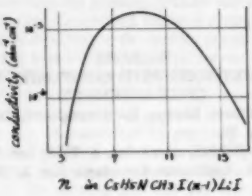
Claims priority, application Japan, Jul. 7, 1977, 52/081838; Nov. 10, 1977, 52/135400

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **13 Claims**

1. A substantially anhydrous cell comprising a solid lithium anode, a solid [electronically] *electrically* conductive iodine

cathode containing a charge transfer complex of iodine with a 1-normal-alkyl-pyridinium iodide *and an iodine-inert electri-*



cally nonconductive powder, and a solid electrolyte of lithium iodide doped with the 1-normal-alkyl-pyridinium iodide.

Re. 31,490

DEVICE FOR ELECTRICAL DISCHARGE MACHINING WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES

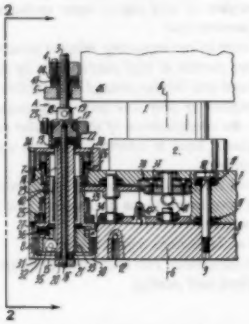
George Wyss, Schwerzenbach, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Original No. 4,104,500, dated Aug. 1, 1978, Ser. No. 696,712, Jun. 16, 1976. Application for reissue May 4, 1981, Ser. No. 260,010

Claims priority, application Switzerland, Jun. 18, 1975, 7932/75; Sep. 8, 1975, 11598/75

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 V 10 Claims



1. In an electrical discharge machining arrangement for machining the surface of a recess in a workpiece electrode, in which relative movements of the electrodes are controlled to maintain given sparking conditions in a machining zone comprised between the electrodes, and comprising a device for controlling a translational displacement of one electrode relative to the other both in the direction of an axis of penetration of one of said electrodes into the other electrode and in a plane perpendicular to said axis, said device comprising a support for said one electrode, first means for moving the support in translation along said axis, and second means for moving the support in translation according to a predetermined amplitude in a plane perpendicular to said axis to provide a combined translational movement of the support along said axis and in said perpendicular plane, said second means comprising an eccentric member having, parallel to said axis of penetration, an axis in relation to which said support is fixed, the improvement comprising a rotatable shaft having an axis parallel to said axis of penetration, said eccentric member cooperating with said shaft for sliding in relation to said shaft in a direction forming a 45° angle with said axis of penetration and for rotating with said shaft about the axis of said shaft, and means for sliding said eccentric member relative to said shaft in response to movement of the support along said axis by said first means such that the amplitude of said translation of said support in said plane progressively increases as a function of the translational movement along said axis when advancing said support beyond a predetermined distance and decreases as a function of the translational movement along said axis when withdrawing said support to said predetermined distance.

Re. 31,491

METHOD OF ELECTRICAL DISCHARGE MACHINING WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES

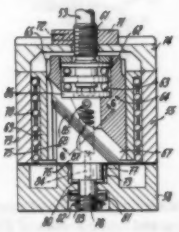
George Wyss, Schwerzenbach, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Original No. 4,104,501, dated Aug. 1, 1978, Ser. No. 696,713, Jun. 16, 1976. Application for reissue May 4, 1981, Ser. No. 260,305

Claims priority, application Switzerland, Jun. 18, 1975, 7932/75

Int. Cl.³ B23K *9/16*

U.S. Cl. 219—69 M 5 Claims



1. In a method of machining by electrical discharges the surfaces of a recess in a workpiece electrode to substantially the same shape as a tool electrode, said method comprising controlling the relative displacements of the electrodes which are translationally movable relative to one another both in the direction of an axis of penetration of one electrode into the other and in a plane perpendicular to said axis and displacing one of the electrodes along said axis of penetration to produce sparking in a machining zone comprised between corresponding surfaces of said electrodes, said machining zone extending on frontal and lateral portions of said surfaces, the improvement comprising simultaneously relatively moving the electrodes in translation in said perpendicular plane with a predetermined amplitude, and progressively increasing said amplitude as a function of the penetration along said axis to provide a combined oblique relative translational movement along at least one generatrix of a surface of revolution of increasing section in said direction of penetration, while controlling said oblique relative translational movement to maintain given sparking conditions in the machining zone comprised between said electrodes at said frontal and lateral portions of said surfaces, wherein the amplitude of said relative translational movement in said plane increases linearly with the penetration along said axis whereby said oblique relative translational movement is along a generatrix of a cone coaxial to said axis of penetration and said generatrix is substantially at 45° to said axis of penetration.

Re. 31,492

ELECTRICAL DISCHARGE MACHINING APPARATUS WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES

George Wyss, Zurich, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

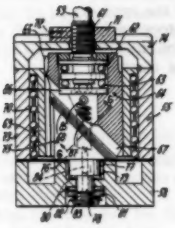
Original No. 4,243,863, dated Jan. 6, 1981, Ser. No. 921,784, Jul. 3, 1978. Division of Ser. No. 696,712, Jun. 16, 1976, Pat. No. 4,104,500, and Ser. No. 696,713, Jul. 16, 1976, Pat. No. 4,104,501. Application for reissue May 4, 1981, Ser. No. 260,306

Claims priority, application Switzerland, Jun. 18, 1975, 7932/75

The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 V 11 Claims



1. In an electrical discharge machining arrangement for machining the surface of a recess in a workpiece electrode, in which relative movements of the electrodes are controlled to maintain given sparking conditions in a machining zone comprised between the electrodes, and comprising a device for controlling a translational displacement of one electrode relative to the other both in the direction of an axis of penetration of one of said electrodes into the other electrode and in a plane perpendicular to said axis, said device comprising a support for said one electrode, first means for moving the support in translation along said axis, and second means for moving the support in translation according to a predetermined amplitude in a plane perpendicular to said axis to provide a combined translational movement of the support along said axis and in said perpendicular plane, said second means comprising an eccentric member having, parallel to said axis of penetration, an axis in relation to which said support is fixed in position, the improvement comprising a rotatable shaft having an axis parallel to said axis of penetration, said eccentric member cooperating with said shaft for sliding in relation to said shaft in a direction forming an angle with said axis of penetration and for rotating with said shaft about the axis of said shaft, means for sliding said eccentric member relative to said shaft in response to movement of the support along said axis by said first means such that the amplitude of said translation of said support in said plane progressively varies as a function of the translational movement along said axis beyond a predetermined distance, [wherein] *slidable linear guide means between* said eccentric member and said shaft [have facing faces], *said* linear guide means [are disposed between said facing faces] allowing sliding of said [facing faces] *eccentric member* relative to [one another] *said shaft* along said direction, and means [are provided] for holding said eccentric member and shaft together while allowing relative radial and axial displacements therebetween.

Re. 31,493

METHOD OF MACHINING BY EROSIVE ELECTRICAL DISCHARGES

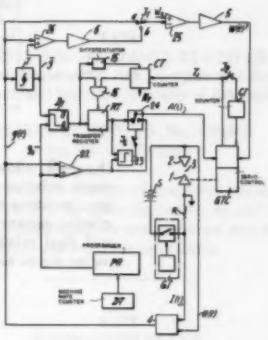
Jean Pfau, Collonge-Bellerive, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Original No. 4,057,703, dated Nov. 8, 1977, Ser. No. 630,959, Nov. 12, 1975. Application for reissue Jun. 8, 1981, Ser. No. 271,561

Claims priority, application Switzerland, Nov. 14, 1974, 15183/74

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 C 26 Claims



1. In a process for machining a surface of an electrode workpiece by electrical discharges initiated and supplied with current by a succession of voltage pulses applied to a machining zone across a machining gap between an electrode tool and said electrode workpiece according to which a relative displacement between said electrodes is achieved along a cyclic translation movement following a closed path [inscribed in a surface] of predetermined [shape and] *contour* in such a manner as to [decrease the gap between said electrodes on a portion of the machines surface and to] produce a cyclic displacement of the machining zone, the improvement comprising [varying the speed of said translation movement] *adjusting the angular speed of the cyclic translation movement at a predetermined value, adjusting the amplitude of said translation movement at a predetermined value in such a manner as to maintain a machining current at substantially all locations along said path during at least a first cycle of translation, measuring the cyclic variations of the machining gap during the following cycles of translation, and varying said angular speed as a function of said variations of the machining gap* so as to remove for all the machined surface of the workpiece the same quantity of material per unit area during at least one cycle of translation.

Re. 31,494

ELECTRIC DISCHARGE MACHINING METHOD AND DEVICE WITH PRESET ELECTRODE

Francois Balleys, Geneva, and Jean Dupraz, Vaud, both of Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Original No. 4,049,942, dated Sep. 20, 1977, Ser. No. 668,750, Mar. 19, 1976. Application for reissue Jun. 26, 1981, Ser. No. 277,654

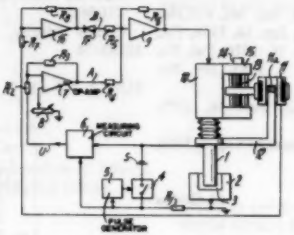
Claims priority, application Switzerland, Apr. 7, 1975, 4352/75

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M 6 Claims

1. A method of machining by applying electrical pulses providing intermittent electrical discharges between an electrode and a workpiece while regulating their relative displacement to maintain a quantity characterizing the sparking conditions at a predetermined value, said method comprising *pro-*

gressively reducing the [rate] *speed of penetration of the electrode in the workpiece as a function of a quantity representing their relative position in a manner to prevent the electrode from penetrating in the workpiece beyond at least one predetermined final relative position* [while maintaining the electrical dis-



charges], allowing the electrode and workpiece freedom to move relative to one another as a function of the sparking conditions up to said final relative position and stopping the relative motion of said electrode and workpiece upon reaching said final relative position while maintaining the electrical pulses across said electrode and workpiece.

PLANT PATENTS

GRANTED JANUARY 10, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,172

ROSE PLANT NAMED DE VITE

Thelma G. DeVor, Pleasanton, Calif., assignor to DeVor Nurseries, Inc., Pleasanton, Calif.

Filed Sep. 27, 1982, Ser. No. 425,047
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—23 1 Claim

1. A new and distinct rose plant, substantially herein described, characterized by its profuse and continuous production of clean white flowers of generally medium size, with rapid growth rate and with vigorous, upright and free branching growth habit.

5,173

ALMOND×PEACH HYBRID ROOTSTOCK TREE

Carl J. Hansen, deceased, late of Citrus Heights, Calif. (by Betty C. Hansen, heir), assignor to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 16, 1982, Ser. No. 408,715
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—30 1 Claim

1. A new and distinct variety of almond×peach hybrid rootstock tree, substantially as illustrated and described, particularly characterized by a relatively high percentage of successful reproductions from hardwood cuttings, by a deep rooting, adventitious root system which provides excellent anchorage, by immunity to root-knot nematode infections, *Meloidygyne incognita acrita* and *M. javanica,* and by a tree generally resembling the "Hansen 2168" but slightly less vigorous, roots from cuttings at a somewhat less rooting percentage, has more red color of the flowers and of the young leaves and shoots in the Spring, and has more small, fine roots associated with the main roots of the root system.

5,174

GRAPEVINE—RELIANCE CULTIVAR

James N. Moore, Fayetteville, Ark., assignor to Arkansas Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark.

Filed Dec. 27, 1982, Ser. No. 438,403
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—47 1 Claim

1. A new and distinct variety of grapevine, substantially as illustrated and described, characterized by its early ripening, seedless fruit of outstanding and unique flavor, and its ability to withstand extreme cold winter temperatures.

5,175

CARNATION PLANT

Leonard E. Carrier, 1911 Sheridan Rd., Encinitas, Calif. 92024

Filed Sep. 30, 1982, Ser. No. 431,835
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct cultivar of carnation plant named Melody substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, and strong and straight stems; superior resistance to soil-borne diseases such as Fusarium oxysporium and Fusarium roseum and other root-rots such as damping off, water molds, and the like; large serrated flowers which open fully without bursting the calyx and causing "splits"; a distinctive and attractive pink flower color which fades evenly to a slightly lighter shade of pink giving a frosted appearance; and good heat tolerance which is superior to that of the parent lines and the so-called "Sim".

PATENTS

GRANTED JAN. 10, 1984

ERRATA

For CLASS	See PATENT NO.
604–006	4,425,113
604–006	4,425,114
604–022	4,425,115
604–034	4,425,116
604–093	4,425,117
604–175	4,425,118
604–164	4,425,119
604–198	4,425,120
604–209	4,425,121
604–237	4,425,122
604–247	4,425,123
604–283	4,425,124
604–321	4,425,125
604–366	4,425,126
604–366	4,425,127
604–381	4,425,128
604–385	4,425,129
604–389	4,425,130
502–038	4,425,255
502–418	4,425,256
502–154	4,425,257
502–154	4,425,258
502–074	4,425,259
502–255	4,425,260
502–339	4,425,261
524–110	4,425,268

PATENTS

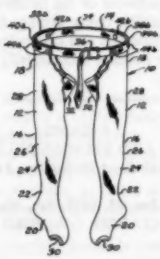
GRANTED JANUARY 10, 1983

GRANTED JANUARY 10, 1984

4,424,595
BOXING GLOVE
Howard Albert, 27 Eaton Rd., Syosset, N.Y. 11791
Filed Nov. 12, 1981, Ser. No. 320,596
Int. Cl.³ A41D *13/10*
U.S. Cl. 2—18 **12 Claims**

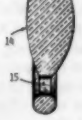
1. In a thumbless boxing glove including a mitt section defined by a soft padded back portion and a palm portion, said back portion and palm portion defining an inner cavity for receiving the entire hand of a boxer, an elongated hand grip member extending across the interior of said inner cavity generally parallel to said palm portion in position to be substantially enclosed by a closed fist of the boxer, the improvement comprising a flexible strap having opposite ends secured to the inside of said inner cavity and sized to receive and surround the thumb of the boxer generally in the area of the inner joint of the thumb, said strip being positioned at one end of said hand grip member for restricting movement of the boxer's thumb to a position for proper clenching about the boxer's fist and preventing movement of the thumb outwardly from the boxer's hand or fist.

4,424,596
THERAPEUTIC STOCKING STRUCTURE
Lauren M. Jackson, Yardley, Pa., assignor to The Kendall Company, Boston, Mass.
Filed Dec. 8, 1980, Ser. No. 214,142
Int. Cl.³ A41B *11/00*
U.S. Cl. 2—240 **1 Claim**



1. A therapeutic stocking structure having interchangeable components including a waist belt totally encircling the body and two stockings releasably secured to said belt at side portions thereof, either of said stockings being releasably secured to either of said belt side portions and either or both of said stockings being worn by a wearer for therapeutic purposes, said belt comprising an extended length band of material and having means for adjusting the length of said belt about a wearer's waist, each of said pair of stockings comprising a circumferential, elastic boot portion, a hip panel extending upwardly from said elastic boot portion, and a stocking margin band at the upper end of said hip panel, there being means for releasably securing said band to either side portion of said waist encircling belt, on the outer surface thereof, including identical, first quick disconnect means on either side portion of said waist encircling belt and second, mating quick disconnect means on each of said stocking margin bands, on an inner surface thereof, facing a wearer, whereby in use, one or both of said stockings may be worn with the stocking margin bands thereof being releasably secured to either of said side portions of said belt.

4,424,597
POSTERIOR CHAMBER IMPLANT LENS
Hans-Joachim Schlegel, Bad Homburg, Fed. Rep. of Germany, assignor to Inprohold Establishment, Vaduz, Liechtenstein
Filed May 3, 1982, Ser. No. 374,439
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3119002
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **13 Claims**



1. Posterior chamber implant lens as a replacement for the natural lens surgically removed, in particular extracapsularly, from the eye of a living being of a higher order, which has a central lens body, and holding means arranged on said lens body extending radially outwards from the periphery for fixing said lens body in its position, said lens comprising a homogeneous, clear, vulcanized silicone rubber which has the following features in combination with each other:

(a) the lens body is formed as a convex lens, wherein the rear surface for facing the lens capsule rear wall has a greater, preferably much greater curvature than the front surface facing the iris;

(b) on the lens body is situated a basically radially outwardly extending, thin-walled support element, the outer edge of which encircles the center point of the lens body with a diameter (D) of between approx. 9.0 and approx 12.0 mm, preferably about 10.0 to 11.0 mm;

(c) in the support element are several spaces distributed over the element, preferably in the form of round holes;

(d) the support element has a material thickness of between about 0.15 mm and 0.40 mm, preferably of about 0.20 mm to 0.25 mm;

(e) the vulcanized silicone material (organopolysiloxane) has a specific gravity of between 1.01 and 1.08, preferably of about 1.02;

(f) the vulcanized silicone material has a Shore hardness of between about 30 and 60, preferably of about 40 to 50;

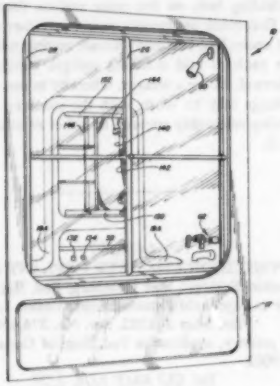
(g) the vulcanized silicone material has a temperature resistance without deformation of the lens and its components of over 356° F. during a longer, dry heat treatment lasting at least 100 hours.

4,424,598

MULTI-MODE BATH MODULE

Louis E. Cima, Adamsville, Tenn., assignor to Aqua Glass Corporation, Adamsville, Tenn.

Filed Jul. 19, 1982, Ser. No. 399,795
Int. Cl.³ A61H 33/06
U.S. Cl. 4—524 6 Claims



1. A multi-mode bath module having an enclosed interior comprising spaced-apart top and bottom walls with opposed pairs of side and end walls extending generally vertically therebetween to jointly therewith define the interior of the module, said walls being joined integrally to define a monolithic shell-like structure, one of said side walls having a relatively large opening therethrough for providing access to said interior, first door means for opening and closing said access, the other of said side walls having a first recessed portion defining a storage compartment, second door means slidably mounted in substantially coplanar relation to said other of said side walls for opening and closing said first recessed portion, said walls having relatively small openings therein, a plurality of comfort mode determining means communicating with the interior of said module through said openings, operating means connected to said mode determining means and responsive to pneumatic control signals for controlling operation of said mode determining means, control means mounted in said recessed portion for producing said control signals, a hand held shower having a shower head and a flexible water hose, a water input for said hose mounted in said first recessed portion, means for removably supporting said shower head in said first recessed portion, and valve means mounted in said first recessed portion for controlling the temperature of water dispensed through said shower head.

4,424,599

CERVICAL PILLOW

Nabil Hannouche, 403 Andulusian Trail, Simpsonville, S.C. 29681

Filed Sep. 18, 1980, Ser. No. 188,304
Int. Cl.³ A47G 9/00
U.S. Cl. 5—436 7 Claims

1. A cervical pillow for use by an individual in a supine position upon a horizontal surface, comprising:

a shoulder engaging portion for supporting the spine between shoulders and for preventing dislodgement of the pillow during sleep;

a lobular neck engaging portion having a first radius of curvature extending across substantially the entire width of said pillow; and

an occiput engaging portion being substantially planar and parallel to said horizontal surface, said occiput engaging portion being below said lobular neck engaging portion when said pillow rests upon a horizontal surface;

said shoulder engaging portion, lobular neck engaging portion and occiput engaging portion being cooperatively

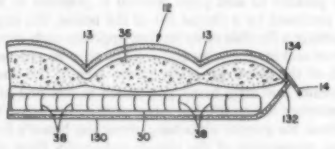
responsive to the weight of a user to increase the radius of curvature of said lobular neck engaging portion to a second radius of curvature of about 17 centimeters, which is a desired radius of curvature for maintaining spinal adjustment in the neck area.

4,424,600

ADJUSTABLE FIRMNESS MATTRESS PILLOW TOP

Milton A. Callaway, Jackson, Oreg., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Jun. 22, 1981, Ser. No. 276,155
Int. Cl.³ A47C 27/18; A47G 9/00
U.S. Cl. 5—470 12 Claims



1. An adjustable mattress construction, comprising:

a. a mattress body designed to provide the primary support for a person lying on top thereof;

b. a pillow top removably fastened to said mattress body; said pillow top having a bottom liner detachably fastened thereto and

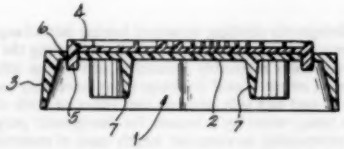
c. a relatively thin, fluid inflatable cushion pressurizable to a variable firmness removably positioned within said pillow top to permit adjustment of the firmness of said pillow top said inflatable cushion being arranged between the lower surface of said pillow top and said bottom liner, said pillow top and inflatable cushion substantially covering the top of the mattress body.

4,424,601

FORMING AND EMBOSSING TEMPLATE

Eleanor J. Weber, 440 Sand Dollar Dr., La Selva Beach, Calif. 95076

Filed Jan. 25, 1979, Ser. No. 6,360
Int. Cl.³ B25F 1/00; B26B 3/00
U.S. Cl. 7—113 6 Claims



1. A forming and embossing template including a forming

means having a body portion and peripheral cutting means having a desired configuration extending laterally therefrom, and an embossing means having a desired pattern releasably carried by said body portion, whereby said cutting means form the shape of an article in said desired configuration in a primary operation and said embossing means subsequently impresses the desired pattern on said article in a secondary operation, wherein the embossing means and body portion are interchangeable with different embossing means and different body portions, said cutting means are flanges which extend from said body in a first direction generally perpendicular thereto, and wherein said embossing means is carried by said body in a second direction opposed to said flanges so that after said desired configuration is formed in said article the template is reversed to impress the desired pattern thereon by said embossing means, wherein said template includes secondary embossing means extending from said body portion in substantially the same direction as said flanges with said secondary embossing means being located directly beneath and proximate to said embossing means.

4,424,602

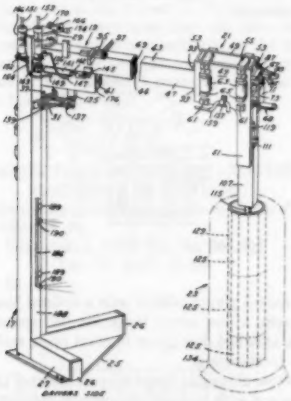
CAR WASHING APPARATUS

James A. Belanger, Northville; Robert J. Wentworth, Ann Arbor, and Graham J. Astley, Novi, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Continuation-in-part of Ser. No. 309,283, Oct. 7, 1981, abandoned. This application Jun. 2, 1982, Ser. No. 383,925

Int. Cl.³ B60S *3/06*

U.S. Cl. 15—97 B **19 Claims**



1. A car washing apparatus for successively scrubbing the front, a side and the rear of a vehicle body during movement along a predetermined path comprising:

an upright standard adapted for mounting upon a floor surface laterally of said path;

a horizontal boom pivotally mounted at one end upon said standard on a generally vertical axis and having the other end free;

a wheel mounting carriage guidably and movably mounted upon said boom between said ends longitudinally thereof;

a motor mounted on said carriage for movement therewith and having a generally vertical drive shaft;

a scrubbing wheel connected to said drive shaft and depending from said carriage and rotated by said motor about a vertical axis and in a predetermined direction;

said boom having a first position where it extends across said path, with said carriage located at or near the free end thereof and said rotating wheel arranged near said path and adapted for registry with the vehicle to scrub either the front or rear of the vehicle body;

said boom having a second position where it extends substantially parallel to said path at one side of the vehicle body, with said rotating wheel in registry with the side of the vehicle body and said carriage being adapted to move freely toward said one end of said boom as the wheel scrubs the side of the vehicle body as a result of contact between the rotating wheel and the moving vehicle;

a fluid control system including first and second fluid control means;

said first fluid control means being connected between said boom and said standard for controlling angular movement of said boom between said first and second positions;

and said second fluid control means being connected between said boom and said carriage for controlling movement of said carriage on said boom in one direction from said one end towards said free end thereof.

4,424,603

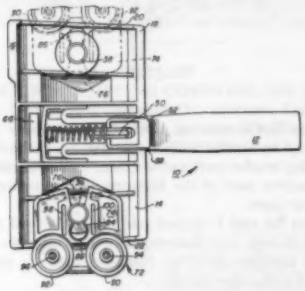
EDGING DEVICE FOR A PAINT TOOL

Peter Balint, Milwaukee; Fredrick B. Burns, South Milwaukee, and Howard R. Moon, Fort Atkinson, all of Wis., assignors to Ez Paintr Corporation, Milwaukee, Wis.

Filed Mar. 8, 1982, Ser. No. 355,904

Int. Cl.³ B05C *17/00*

U.S. Cl. 15—210 R **14 Claims**



1. An edging cartridge for a paint applying tool, wherein said tool includes a base with a front, a back and first and second sides, and a handle secured to said base, said cartridge comprising:

a pivot arm,

means for pivotally securing said pivot arm on one end to said base to allow said arm to pivot relative to said base, and

a pair of wheels rotatably mounted in tandem on the other end of said arm, each wheel rotatable about an axis spaced from the axis of rotation of the other wheel and both wheels pivotable with said arm about said base.

4,424,604

WHEEL KIT FOR AN ITEM OF FURNITURE

Emanuel F. Dupuis, 21 Prince Philip Dr., St. Catharines, Ontario, Canada L2N 3H9

Continuation-in-part of Ser. No. 906,463, May 17, 1978, abandoned. This application Apr. 17, 1981, Ser. No. 255,009

Claims priority, application Canada, Sep. 28, 1978, 312270

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—29 **2 Claims**

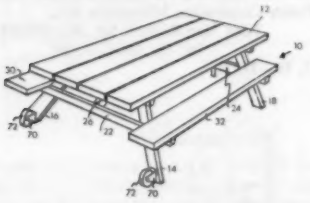
1. In the combination of a furniture item and a wheel and handle kit for mobilization of the furniture item, the combination comprising:

at least one wheel assembly attached to one end of the furniture item, the assembly having a wheel engageable with the ground for support of the said one end of the furniture item clear of the ground when the other end of the furni-

ture item is lifted from the ground and the furniture item is thus moved from a horizontal position to a tilted position in which it is to be moved on the wheel assembly;

and at least one handle assembly attached to the said other end of the furniture item for the said lifting thereof from the ground;

wherein the wheel assembly comprises a wheel bracket member having an L-shaped portion with a protruding rim member, the L-shaped portion having a first vertical bracket part engaged with a surface of the furniture item that is at least approximately vertical when the furniture item is in horizontal position, and a second horizontal bracket part comprising a flat bottom plate engaged with a bottom surface of the furniture item that is horizontal when the furniture item is in horizontal position, so that the said flat bottom plate is interposed between the said furniture item bottom surface and the ground, the furniture item rests upon the flat bottom plate, and the flat bottom plate is in turn in contact with the ground;



wherein the protruding rim member extends from the second horizontal bracket part parallel to the first vertical leg bracket part and is spaced therefrom so that the respective part of the furniture item is interposed between them;

wherein the said L-shaped portion has at least one aperture therein; and fastening means passing through the said aperture into the furniture item to secure the bracket member thereto;

wherein the bracket member further has a vertically-disposed arm extending from said first vertical bracket part and carrying a respective wheel mounted thereon for rotation about a horizontal axis, the vertical spacing between said flat bottom plate and said horizontal axis being substantially equal to the radius of the wheel, whereby the wheel is located in predetermined position clear of the ground when the furniture item is horizontal, and is in engagement with the ground for movement of the furniture item on the wheel upon said tilting of the furniture item.

4,424,605

SLIDING DOOR TRACK ASSEMBLY INCLUDING A TRACK COVER AND MOUNTING SUPPORTS

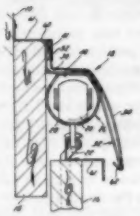
George Squires, Madison, and Charles Bland, Beloit, both of Wis., assignors to Combo Corporation, Walkerton, Ind.

Filed Feb. 16, 1982, Ser. No. 348,750

Int. Cl.³ E05D *13/02*

U.S. Cl. 16—94 R **4 Claims**

1. A sliding door track assembly in combination with a sliding door of the type having a number of rollers mounted on the top of the door for suspending the door over an opening in a building wall, said assembly comprising a split elongate track for matingly engaging said rollers, a plurality of brackets connected at spaced intervals to the top of said track for mounting said track on the wall above said opening, each of said brackets including an offset portion spaced above said track, a separate cover support member corresponding to each of said brackets, each said support member including a tab adapted to be inserted into the space provided between the offset portion of the bracket and the top of the track to secure the support member to the bracket and an elongate track cover having a portion



overhanging said door and supported by a lower end of said support member.

4,424,606

HINGE FOR OPENING AND CLOSING A DUST COVER

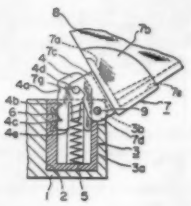
Akira Sorimachi, Yokohama, Japan, assignor to Katoh Electrical Machinery Co. Ltd., Yokohama, Japan

PCT No. PCT/JP80/00319, § 371 Date Aug. 10, 1981, § 102(e) Date Aug. 10, 1981, PCT Pub. No. WO81/01900, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 22, 1980, Ser. No. 293,215

Int. Cl.³ E05F *1/10*

U.S. Cl. 16—223 **3 Claims**



1. In a record player cabinet with a defined hinge receiving space therein, a dust cover hinge for said space which will permit the attached dust cover to pivot open, said hinge comprising in combination:

(a) a hollow elongated hinge support member (3) sized to fit said space, with an inner and an outer end, having a spring case (3*a*) with an inner wall at said inner end and hinge pin support means (3*b*) at said outer end;

(b) a flat slider (4) in said spring case (3*a*) with a defined upper portion, lower end and a front portion, a plurality of recesses (4*a*, 4*b*) in said front portion, an acting pin (4*d*) passing through said upper portion with projections extending out therefrom and an upwardly biased vertical compression coil spring (5) with two ends, one end being connected to said slider lower end and the other end being in said spring case (3*a*), a leaf spring (6) mounted on said spring case inner wall to sequentially engage said slider recesses (4*a*, 4*b*) at predetermined pivoting positions of the hinge; and,

(c) a cover support (7) with a base plate (7*a*), an angle-shaped holder (7*b*) on said base plate, follower means (7*c*) under said base plate, hinge pin supports (7*d*) and a hinge pin under said follower means, said follower means (7*c*) engaging said acting pin projections, said hinge pin being rotatably mounted to the hinge pin support means (3*b*) by the hinge pin supports (7*d*).

4,424,607
SYMMETRICAL DOOR HINGE

Günter Langenhorst, Bad Sassendorf, Fed. Rep. of Germany, assignor to Die top-element Bauelemente für Innenausbau + - Raumgestaltung GmbH & Co. KG, Hamm, Fed. Rep. of Germany

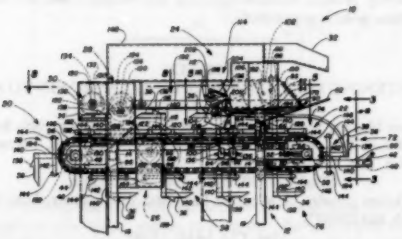
Filed Jun. 11, 1981, Ser. No. 272,472
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 8015568[U]
Int. Cl.³ E05C 3/02, 5/04
U.S. Cl. 16—387 3 Claims

1. A door hinge comprising a pair of identical hinge elements adapted to be mounted respectively upon a door frame and a door, each of said elements having a flat flange provided on one edge over the full length thereof with a sleeve in axial symmetric orientation with said flange whereby a median plane at said flange is a diametral plane of the sleeve, each sleeve being open at its opposite ends and of uniform cross section over its entire length, each of said flanges being provided with a plurality of screw-receiving holes; and a hinge pin formed with a collar at an intermediate location along its length and respective identical cylindrical ends each extending over said full length and interchangeably received in said sleeves from opposite ends to swingably interconnect said elements, both of said elements having centrally disposed screw-receiving holes in the respective flanges and all of the mounting holes of each flange being disposed mirror symmetrically about respective planes perpendicular to the axis of the respective sleeve whereby said elements can each be rotated about the axis of the respective centrally disposed hole for opposite side hinging of a door.

4,424,608
AUTOMATIC POULTRY BREAST PROCESSING MACHINE AND METHOD

Eugene G. Martin, Ephrata, Pa., assignor to Victor F. Weaver, Inc., New Holland, Pa.

Filed Apr. 1, 1982, Ser. No. 364,604
Int. Cl.³ A22C 21/00
U.S. Cl. 17—52 18 Claims

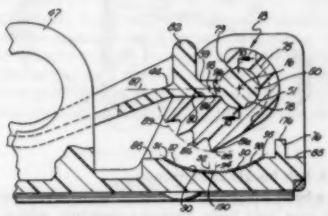


18. A buttom cut method of removing whole wing members from forward bilateral carcass sections consequent to the automated mechanical optionally selective sectioning thereof accomplished without either bone fiber contamination or removal of breast meat therewith, said method comprising impaledly placing said carcass sections individually and successively upon supports therefor insertably through the body cavity thereof with the rearward ends of said carcass sections respectively foremost leading so the back thereof is disposed uppermost and the breast thereof is dependent and rearward facing with the wings thereof respectively outward extended either bilateral side thereof, indexibly moving said carcass sections thus supported individually forward while simultaneously slidably engaging and outward distending progressively said extended wings bilaterally while rotating the same upwardly and slightly rearward to the forward direction thus initiating and ultimately effecting wing to carcass section shoulder joint dislocation prepatory to the severing thereof, protectively shielding the breast sections from contact with joint severing knives concurrent with forward movement engagement thereof bilaterally with pivotally deflectable blade shields progressively engaging to that point of directed exposure immediately prior to contact of the then respective dislocated shoulder joint distended connecting tissue and tendon materials of said forward carcass section with severing blades, slowing the supported carcass section forward movement just prior to and continually reduced throughout respective dislocated and distended shoulder joint contact by severing blades respectively therewith in effecting simultaneous bilateral dislocated and distended shoulder joint passage thereof in accomplishing whole wing button cut removal by severing only the distended tissue and tendon materials between the dislocated ball-and-socket joint of said shoulder joints respectively, and upon completed passage of severing blades through said shoulder joints indexibly stopping forward movement of the remaining supported carcass section torso member for continued forward movement indexibly thereafter into mechanical optionally selective sectioning blades upon the next successive forward movement indexing of a supported carcass section in accomplishing whole wing button cut removal therefrom.

4,424,609
LOCK FOR GRIPPING CORDS OR THE LIKE

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001

Filed Jan. 18, 1982, Ser. No. 339,973
Int. Cl.³ F16G 11/00
U.S. Cl. 24—134 R 11 Claims



1. A device for gripping at least one elongated flexible element and retaining it against longitudinal movement in a predetermined direction, comprising:

a first member having a gripping surface;

an actuating member mounted to said first member for relative swinging movement essentially about an axis between a locking position and a released position; and

a locking member connected to said actuating member for swinging movement therewith between said positions, and having a gripping portion which in said locking position of the actuating member is positioned to clamp said elongated element against said gripping surface of said first member and which in said released position of the actuating member releases said element for longitudinal movement in said direction;

said locking member being free for limited pivotal movement relative to said actuating member about said axis when the latter is in said locking position;

said gripping portion of said locking member having a plurality of teeth for contacting and gripping said elongated element which are distributed essentially eccentrically with respect to said axis and adapted to move progressively closer to said gripping surface of said first member

to grip said element progressively more tightly as said locking member pivots relative to said actuating member when the latter is in said locking position;

said gripping surface of said first member being shaped to define and form a recess opposite said gripping portion of said locking member into which the locking member presses said elongated flexible element;

said gripping surface having teeth within and defining said recess following essentially a pattern which curves progressively toward said axis as the surface advances about the axis in the direction in which said locking member pivots relative to said actuating member to tighten the grip on said elongated element;

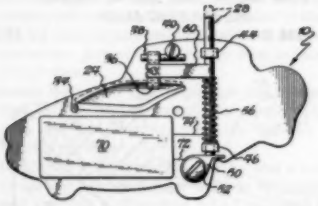
said teeth of said gripping surface of said first member including a first series of said teeth distributed arcuately about a second axis which is essentially parallel to but offset from said first axis, and a second series of said teeth distributed arcuately about a third axis which is essentially parallel to and offset from both of said first and second axes.

4,424,610

OBJECT-SIMULATING BELT BUCKLE

John J. Barbieri, 756 E. Main St., East Aurora, N.Y. 14052, and Ross C. Oar, Orchard Park, N.Y., assignors to John J. Barbieri, East Aurora, N.Y.

Filed Mar. 18, 1981, Ser. No. 245,016
Int. Cl.³ A44B *11/00*
U.S. Cl. 24—163 K 10 Claims



1. A belt buckle comprising:

(a) a body adapted to be connected to a belt for wearing on a user, said body having a structure which simulates a known object having a movable component, said body having means thereon for connecting said body to a belt;

(b) an element carried by said body and located so as to be exposed to view when said buckle is worn on the user, said element having a structure which simulates the movable component of the object;

(c) means for operatively connecting said element to said body in a manner permitting movement of said element relative to said body;

(d) an operator member coupled to said body in a manner permitting movement of said member in two directions relative to said body in response to manual operation, said operator member being located on said body for manual operation when the belt buckle is worn on the user; and

(e) motion transmission means carried by said body and operatively connected to said element and to said operator member for converting movement of said operator member into movement of said element in two directions relative to said body while the belt buckle is worn on the user;

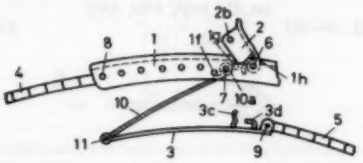
(f) whereby manual operation of said operator member by the user causes movement of said element relative to said body for simulating the appearance and activity of the known object while the belt buckle is worn on the user.

4,424,611

BUCKLE FOR WATCH BANDS

Yoshinobu Mori, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,145
Claims priority, application Japan, Dec. 17, 1980, 55-181545[U]
Int. Cl.³ A44C *5/08*
U.S. Cl. 24—192 4 Claims



1. A buckle for a watch band having two ends comprising:

(a) a clasping member having a top plate, a first end of said clasping member connected to the first end of said band, a second end and an opening formed in said top plate adjacent said second end;

(b) a middle plate rotatably connected to said second end of said clasping member;

(c) a bottom plate having a first end rotatably connected to said middle plate and a second end connected to the second end of said watch band;

(d) a first engaging means for engaging and securing said clasping member to said bottom plate;

(e) a second engaging means for engaging and securing said clasping member to said bottom plate;

(f) said second engaging means comprising a lock member rotatably mounted on said clasping member at a position adjacent the second end of said clasping member;

(g) a hook portion formed on said lock member;

(h) a hook portion on said bottom plate adjacent said second end of said bottom plate;

(i) said hook portion on said bottom plate being parallel with said bottom plate;

(j) said hook portion on said lock member passing through said opening and engaging said hook portion on said bottom plate when said lock member is rotated in one direction;

(k) said hook portion on said lock member being parallel with said bottom plate when rotated in said direction;

whereby relative rotation between said middle plate and said bottom plate is prevented.

4,424,612

FASTENING PLATE FOR SECURING A SNAP PIN TO AN AUTOMOBILE DOOR PANEL

Klaus Muller, Weil-Haltingen, and Leon Tancer, Lorrach, both of Fed. Rep. of Germany, assignors to A. Raymond, Lorrach, Fed. Rep. of Germany

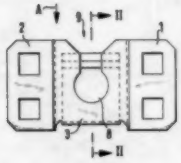
Filed Apr. 29, 1981, Ser. No. 258,585
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 8013284[U]
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—669 8 Claims

1. A fastening plate for securing to a panel a removable snap pin which includes a head and adjoining neck, the head of the snap pin having a rear face, a circumferential wall, and a circumferential shoulder integral with the snap pin's neck, comprising:

a support plate for attachment to the panel,

a holding plate offset from said support plate, said holding plate including an aperture larger in diameter than the neck of the snap pin and smaller in diameter than the head of the snap pin, said aperture including an opening on one side for slideably accepting the neck of the snap pin, and

clamp means for resiliently pressing the shoulder of the snap pin against the portions of the holding plate surrounding said aperture to thereby securedly hold the snap pin perpendicular to the support plate while permitting the radial movement of the snap pin within the clearance between the neck of the snap pin and the aperture,



said clamp means including a rest plate positioned under said aperture at a distance from said holding plate slightly less than the thickness of the snap pin's head, and said rest plate including a free end aligned with said opening, the distal portion of said free end being bent toward said support plate and ending just short of the extended plane of said support plate.

4,424,613

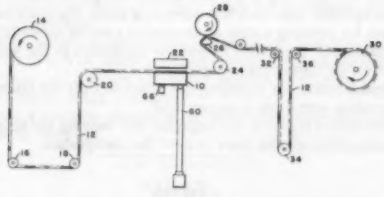
APPARATUS FOR BRUSHING PILE FABRIC

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 224,753, Jan. 13, 1982, Pat. No. 4,388,750. This application Jul. 21, 1982, Ser. No. 400,563

Int. Cl.³ D06C 27/00

U.S. Cl. 26—2 R **6 Claims**



1. A machine to brush the pile fabric comprising: means to supply a pile fabric, means to heat the pile of the pile fabric, means to urge the selvedge of the pile fabric in an outward direction to remove the wrinkles therefrom, means to brush the pile of the pile fabric and means to take up the pile fabric, said means to urge the selvedge of the pile fabric in an outward direction including an elongated hollow member and a spreader box mounted on each end of said elongated hollow member, each of said spreader boxes having an opening in the top thereof and a rotating brush therein, means operably associated with each of said brushes urging said brushes towards said opening, and means to rotate said brush mounted on said spreader box, each of said spreader boxes having a suction conduit operably associated therewith.

4,424,614

APPARATUS FOR THREADING UP A RAPIDLY TRAVELLING THREAD IN A TEXTURIZING NOZZLE

Wolfgang Martin; Hans Knopp, both of Ludwigshafen; Dieter Herlon, Frankenthal; Gerhard Conzelmann, Otterstadt; Guenter Leuchtmann, Mannheim, all of Fed. Rep. of Germany; Peter Gujer, Winterthur, Switzerland; Dietar Guldenfels, Dinhard, Switzerland, and Armin Wirz, Ossingen, Switzerland, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 230,355, Jan. 30, 1981, Pat. No. 4,356,604, which is a division of Ser. No. 25,173, Mar. 29, 1979, Pat. No. 4,280,260. This application Sep. 23, 1981, Ser. No. 305,043

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817478

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ D02G 1/12

U.S. Cl. 28—255 **1 Claim**

1. In a fluid-jet texturizing arrangement in which, during steady state operation, thread is conveyed through a texturizing nozzle at high speed by means of a pressurized texturizing fluid medium, an apparatus for introducing at least one thread into a fluid-jet texturizing nozzle, said fluid-jet texturizing nozzle having an inlet member means of variable cross-section, wherein said inlet member means at its inlet end has a transverse slot formed therein for guiding the thread when extending in a direction substantially normal to the axis of said inlet member means, and wherein said apparatus comprises means for mounting the fluid-jet texturizing nozzle together with the inlet member means for pivotal movement between a threading position and a steady state position, a reduced pressure chamber, and suction means coupled to said texturizing nozzle through said reduced pressure chamber in said threading position such that a reduced pressure, relative to atmospheric pressure, is set up at the inlet member means of the texturizing nozzle, thereby to draw the end of a cut thread in said slot into the nozzle.

4,424,615

CAPACITOR AND METHOD OF MANUFACTURING THE SAME

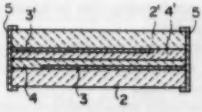
Kikuo Wakino, Muko, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 31, 1981, Ser. No. 249,428

Claims priority, application Japan, Apr. 3, 1980, 55-44141

Int. Cl.³ H01G 7/00, 4/06, 4/10

U.S. Cl. 29—25.42 **9 Claims**



9. A method of manufacturing a capacitor, comprising the steps of:

(A) forming a first composite including:

(1) a first ceramic insulating layer;

(2) a first electrode located on part of said first insulating layer; and

(3) a first ceramic dielectric layer located on said first ceramic insulating layer and covering said first electrode;

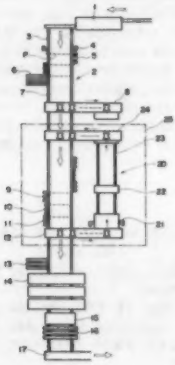
(B) forming a second composite including:
(1) a second ceramic insulating layer;
(2) a second electrode located on part of said second insulating layer; and
(3) a second ceramic dielectric layer located on said second ceramic insulating layer and covering said second electrode;
(C) placing said first and second composites together such that said first and second electrodes face each other with said first and second dielectric layers touching each other and being located between said first and second electrodes; and thereafter
(D) firing said first and second composites to simultaneously sinter said first and second dielectric layers whereby said first and second dielectric layers are integrated with each other.

4,424,616

CONDITIONING LINE FOR STEEL PIPES

Masachika Numano, Yokosuka; Shinji Akita, Yokohama, and Minoru Morita, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1981, Ser. No. 291,955
Claims priority, application Japan, Aug. 20, 1980, 55-116727
Int. Cl.³ B23P *23/06*
U.S. Cl. 29—33 T 10 Claims



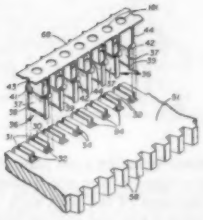
1. A steel pipe conditioning line comprising:
at least one main line;
at least one reprocessing line for rejected steel pipe;
said main line and said reprocessing line being arranged parallel to each other;
means to automatically transfer said rejected steel pipe from said main line to said reprocessing line;
means for reprocessing said rejected steel pipe on said reprocessing line;
means for automatically transferring said reprocessed steel pipe back to said main line;
one or more closed loops comprised of at least one main line and at least one reprocessing line arranged in series; and
said main line of each said closed loop includes at least one pair of thread cutting means and at least one thread inspecting means.

4,424,617

METHOD AND APPARATUS FOR BOXING AND ENCAPSULATING ELECTRICAL DEVICES

William J. Fanning, Glen Ellyn; Peter J. Nichele, Chicago, Ill., and Roger P. Pratali, Berwyn, all of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,833
Int. Cl.³ H01G *4/00*
U.S. Cl. 29—25.42 14 Claims



1. A system for encapsulating and boxing capacitors, which comprises:
a trackway;
a stack of carriers positioned at one end of the trackway, each of said carriers having a series of slots for receiving capacitors and including a series of teeth equal in number to the number of slots;
a pair of cog devices coupled together and mounted for movement forward and backward relative to said trackway and each cog device having a slide with a toothed end section mounted for movement toward and away from the trackway to engage the toothed end with the teeth on carriers positioned in said trackway;
means for advancing a succession of carriers from said stack into position to be engaged by the teeth on a first of said cog device slides;
means for operating said cog devices to move said slides (1) forward to advance the tooth engaged carriers, (2) away from said carriers, (3) backward relative to the carriers, and (4) toward said carrier to engage the slide teeth with the carrier teeth;
means for advancing a box into each slot upon each advance of a carrier;
means for injecting a predetermined charge of heat curable encapsulant into each box advanced along the trackway;
means for pressing a strip connected to pairs of terminal leads attached to capacitors to seat the capacitors in the boxes;
an oven for curing the encapsulant;
stripping means for engaging the boxes to shift the boxes and terminal strip from a carrier; and
means within the oven for engaging and moving the stripping means through the oven to cure the encapsulant.

4,424,618

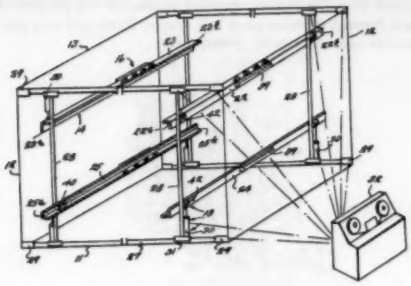
ASSEMBLY OF STRAIGHT DUCT AND TRANSITIONS

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Division of Ser. No. 788,641, Apr. 18, 1977, Pat. No. 4,111,143.
This application Apr. 20, 1978, Ser. No. 898,458
Int. Cl.³ B21D *39/00*
U.S. Cl. 29—509 7 Claims

1. A method of automatically forming a duct transition piece using an edge interlocking machine having rollers; comprising the steps of
forming a plurality of ductwork pieces each having a predetermined length, out of sheet material, and at least two pieces having opposed sides that are not parallel;
forming at least one of the pieces so that it has an edge configuration adapted to be acted upon to interlock and form a seam with another piece to form the duct; and

feeding the plurality of pieces into the edge interlocking machine, and acting upon the at least one edge configuration so that it forms a seam with another piece to form a duct transition piece having the predetermined length.



4,424,619

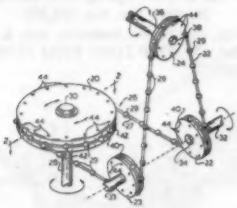
POSITIVE DRIVE SYSTEM

Rene A. Conrad, 215 Olive Hill La., Woodside, Calif. 94062

Continuation-in-part of Ser. No. 845,929, Oct. 27, 1977, Pat. No. 4,214,488, which is a division of Ser. No. 97,132, Nov. 26, 1979, Pat. No. 14,315,751. This application Dec. 28, 1981, Ser. No. 334,831

Int. Cl.³ B22D *11/126*

U.S. Cl. 29—527.4 **3 Claims**



1. A method of making a drive cable for a positive drive system, comprising:

passing a length of flexible multi-strand wire cable through a series of sets of coining wheels which compress the cable strands and deform the outer surface of said cable to provide a coined cable; and

forming a plurality of nodules on said coined cable at regular spaced intervals.

4,424,620

METHOD OF MACHINING A KNUCKLE CASTING

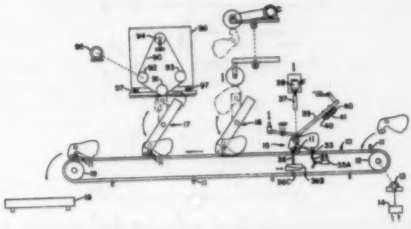
Frank W. Oshinsky, McKeesport, Pa., assignor to McConway & Torley Corporation, Pittsburgh, Pa.

Filed Jul. 30, 1981, Ser. No. 288,597

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—558 **5 Claims**

1. A method for processing a knuckle casting for a railroad coupler wherein the knuckle casting includes a nose portion to engage with the nose portion of a knuckle of a mating coupler when the couplers are coupled together, the knuckle casting having an outer peripheral surface defining inter alia a front face extending from said nose portion laterally and rearwardly to a heel adjacent a surface of a hub for a pivot pin opening through the body of the knuckle casting, the knuckle casting rearwardly of said hub having a tail stop merging with a tail surface forming the generally-rearward extremity of the casting, said method including the steps of moving a knuckle casting to a reaming station with the pivot pin opening extending transverse to the direction of movement, aligning the pivot pin opening in the knuckle casting with reaming means, holding the aligned knuckle casting while reaming the pivot pin opening to a desired size, moving the knuckle casting to a lifting station, supporting the knuckle casting at the lifting station for rotation about an axis generally parallel to the axis of the reamed pivot pin opening, grinding at least said front face, heel, tail stop and tail surface of the knuckle casting to a preestablished profile while rotating the casting about an axis generally parallel with the axis of the reamed pivot pin opening, and thereafter contacting at least part of the outer peripheral surface of the knuckle casting while rotated about an axis generally parallel to the axis of the reamed pivot pin opening with a machine member under a predetermined pressure to finish-grind the contacted surface.



4,424,621

METHOD TO FABRICATE STUD STRUCTURE FOR SELF-ALIGNED METALLIZATION

Shakir A. Abbas, Wappingers Falls, and Ingrid E. Magdo, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,894

Int. Cl.³ H01L *21/302, 21/76*

U.S. Cl. 29—571 **25 Claims**

1. Method of forming self-aligned isolation for semiconductor devices comprising:

forming a first insulating layer on the surface of a monocrystalline substrate whose coefficient of expansion is similar to that of the substrate;

forming an oxidation resistant second insulating layer over said first layer;

forming a polycrystalline silicon layer over said second layer;

forming an oxidation resistant third insulating layer over said polycrystalline silicon layer;

removing said third insulating layer and said polycrystalline silicon layer down to said second layer to produce substantially vertical sidewalls on the remaining third insulation layer and polycrystalline silicon layer;

wherein the said removing of said third insulating and polycrystalline silicon is in areas designated to be at least the said isolation areas in said substrate, and the remaining polycrystalline silicon covers areas of said substrate designated to have semiconductor devices formed therein;

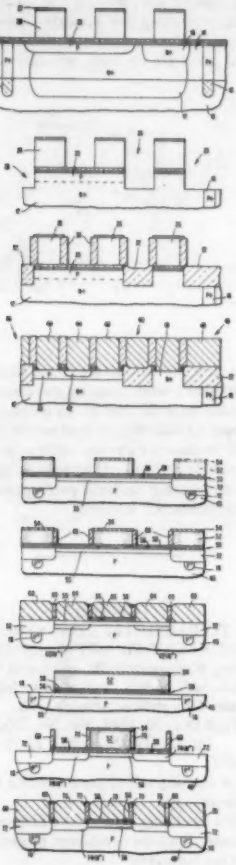
thermally oxidizing the exposed sidewalls of said polycrystalline silicon layer to produce a silicon dioxide sidewall layer thereon;

removing the exposed said second layer and in turn the exposed first layer in said designated to be at least the isolation areas;

etching grooves into the exposed said substrate using the

remaining said third insulating layer and polycrystalline silicon layer as a mask;

filing said grooves with dielectric isolation material; and



forming devices in said substrate between said grooves filled with dielectric isolation material.

4,424,622

METHOD OF MAKING INTEGRAL CORROSION RESISTANT MANIFOLD

Peter E. F. Krause, R.R. #1, Limebouse, Ontario, Canada

Filed Jul. 19, 1982, Ser. No. 399,729

Claims priority, application Canada, Jul. 15, 1982, 407360

Int. Cl.³ H05B *3/00*

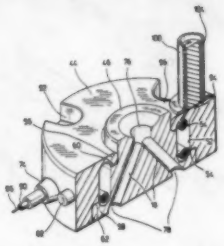
U.S. Cl. 29—611 **10 Claims**

1. A method of manufacturing an electrically heated injection molding manifold having an inner body portion with a plurality of melt ducts extending therethrough seated in a hollow retaining ring portion defining a peripheral space therebetween which receives an electrical heating element surrounded by a highly conductive material, comprising the steps of:

(a) forming the inner body portion of a suitable abrasion and corrosion resistant material with a plurality of melt ducts extending from a common inlet to separate outlets;

(b) forming the hollow retaining ring portion with a central opening adapted to receive the inner body portion to define a peripheral space therebetween;

(c) assembling the retaining ring portion on the inner body portion with the heating element located in the peripheral space formed therebetween and spaced from said ring portion and said inner body portion; and



(d) vacuum casting a highly thermally conductive material into the peripheral space thereby surrounding the heating element and providing the manifold with an integral construction.

4,424,623

APPARATUS FOR LADDER CONSTRUCTIONS

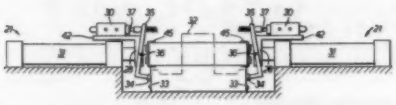
William Bailey, P.O. Box 73, Acacia Ridge 4110 Queensland, Australia

Division of Ser. No. 136,767, Apr. 3, 1980. This application Jun. 25, 1982, Ser. No. 392,376

Claims priority, application Australia, Apr. 4, 1979, PD8319

Int. Cl.³ B23P *21/00*; B23Q *15/00*

U.S. Cl. 29—716 **5 Claims**



1. Apparatus for forming a ladder of ladder components comprising a pair of stiles and a plurality of steps, said steps being formed with at least one hollow section at each end, comprising a carriage assembly adapted to support and to advance the operatively positioned ladder components longitudinally along a path in a stepwise fashion, two longitudinally spaced pairs of opposed hydraulic rams, the rams of each said pair being disposed at opposite sides of said positioned ladder components supported on said carriage, each said ram being provided with operating heads, one said pair of operating heads being provided with blanking dies to force said hollow end sections of said steps through the respective said stiles to protrude therefrom and the other said pair of operating heads being provided with swaging dies to swage the protruding hollow end sections about the respective said stiles.

4,424,624

MULTIPLE COIL HEAT EXCHANGER

Richard W. Sievers, South Windsor, Conn., assignor to Spiral Tubing Corp., Windsor, Conn.

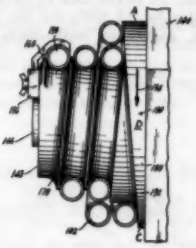
Division of Ser. No. 141,894, Apr. 21, 1982, abandoned, which is a continuation-in-part of Ser. No. 83,568, Oct. 11, 1979, abandoned. This application Sep. 20, 1982, Ser. No. 420,600

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—727 **9 Claims**

1. An apparatus for forming a tube into a multiple coil heat exchanger comprising a support, a coil-forming die mounted

on said support for rotation about an axis and having a thread sized to receive said tube commencing at one end of said die and terminating at the other end thereof, coil-reversing means formed at said other end of said die which merge with and are



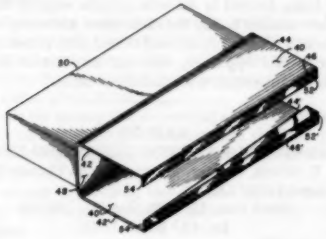
a continuation of said thread, said coil-reversing means having a first portion which spirals outward to a radial position above said thread at said other end and a second portion which axially extends toward said one end of said die, and means for rotating said die about said axis.

4,424,625

CONNECTOR REMOVAL TOOL

Daniel L. Callahan, Roseville, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,758
Int. Cl.³ H05K *3/32, 13/04*
U.S. Cl. 29—764 **7 Claims**



1. For use in removing a strip electrical connector held in place by friction contact with electrical interconnection pins associated therewith and mounted to a support assembly, a removal tool comprising:

a pair of wall member means arranged in a spaced apart relationship forming a channel therebetween to accommodate the width of an electrical connector to be removed, each of said wall members having leading, trailing, top and bottom edges;

joining means coupled intermediate said pair of wall member means for holding said pair of wall member means in said spaced apart relationship;

striking means coupled to said joining means for allowing motive force to be applied to the removal tool; and

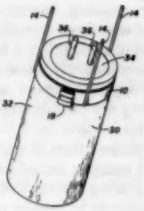
deflection means mounted at each of said bottom edges forming smooth surfaces with said bottom edges for sliding on a support assembly and disposed along the length thereof for defining a continuous slot therebetween, said deflection means for deflecting the electrical connector out of holding contact with the friction fit electrical pins without contacting said electrical pins as the removal tool is moved axially along the length of the connector being removed, said deflection means of a predetermined length sufficient to avoid damage to said electrical connector or said electrical pins during removal.

4,424,626

ANCHORING DEVICE AND METHOD FOR SECURING A CAPACITOR TO A PRINTED CIRCUIT BOARD

Charles E. Pennington, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Sep. 16, 1980, Ser. No. 187,752
Int. Cl.³ H05K *3/34;* **F16M** *13/00*
U.S. Cl. 29—839 **7 Claims**



1. An anchoring device for securing a capacitor body to a printed circuit board, comprising:

circumferential band means for encircling said capacitor body, said band means including a crimpable section for reducing the circumference of said band and for applying compression to said band to engage said capacitor body, said band means also including means for engaging recesses in said capacitor body to further secure said capacitor body by contacting surfaces thereof intended to face away from said printed circuit board; and

a plurality of connection means affixed to said band means and extending perpendicular to the circumference therefor for penetrating said printed circuit board to allow mounting of said clamp means and thereby said capacitor body to said printed circuit board.

3. A method for securing a capacitor body to a printed circuit board, comprising the steps of:

locating a circumferential band means around said capacitor body including positioning said band means over a circumferential groove in said capacitor body, said band means having a crimpable section for reducing the circumference of said band means and a plurality of connection means affixed to said band means and extending perpendicular to the circumference of said band means;

compressing said crimpable section to engage said band means with said circumferential groove and said capacitor body; and

securing said band means and said capacitor body to said printed circuit board including penetrating said printed circuit board with said connection means.

4,424,627

WIRING HARNESS CONSTRUCTION MEANS AND METHOD

John W. Tarbox, 13096 Caminito Del Rocio, Del Mar, Calif. 92014

Filed Aug. 4, 1980, Ser. No. 170,722
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **31 Claims**

1. Structure for retaining, identifying and arraying wire strands in electrical harnesses and the like, said structure comprising:

(a) an elongated comb-like strip having a row of teeth on at least one longitudinal edge thereof with elongated slots defined by and between said teeth and extending transversely of the strip;

(b) said teeth having substantially inflexible shank portions and opposing detent portions adjacent to the ends of said teeth, and said detent portions being at least slightly flexible and capable of accepting and capturing at least one wire strand in each of said slots by resilient deflection in

the general longitudinal plane only of said comb-like strip without substantial deflection of said shank portions;

(c) a keeper securable by said detent portions on said teeth to retain the wire strands;

(d) the detent portion of each of said teeth defining an arrowhead with a pair of resilient down-sloped barbs to engage said keeper; and,

(e) the barbs of each of said barb pairs being connected along at least one edge by a flexible web.

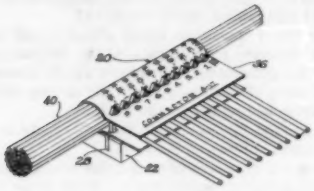
14. Structure for retaining, identifying and breaking out individual strands of wire from a bundle comprising:

(a) a wrapper having a back flap, a front flap, and a central connector portion hingedly joining said flaps;

(b) means connecting said flaps at multiple spots separated by intervals along the outside edges thereof opposite the central connector portion to define sequential breakout openings between said flaps at said spaced intervals; and

(c) indicia on said wrapper indexed with said spaced intervals providing routing information correlated to the particular wire strands to be broken out through the respective openings to reduce the dependency of a harnessmaker on outside instruction materials.

19. A layout board apparatus for temporarily retaining, identifying and arraying strands in electrical harnesses or the like which have a strand bundle with at least one breakout point therealong from which individual strands from said bundle are ordered and diverted from the strand bundle to a connector or the like, said layout board comprising:



(a) a layout panel;

(b) at least one breakout station defined on said panel;

(c) a breakout element for each of said breakout stations, each such element being adapted to independently engage and contain a strand bundle at a breakout point and order and divert individual strands from the bundle; and

(d) said at least one station each having means to temporarily and releasibly engage a breakout element.

25. A method of laying out a wiring harness having a plurality of strand breakout points along a bundle of strands using a layout board with a plurality of breakout stations and releasible engagement means at each of said layout stations and a plurality of comb-like strips having upright teeth with detent tips engagable by said engagement means, said method including the following steps:

(a) engaging at least one of said comb-like strips in each of those of said engagement means which correspond to a breakout point of a harness being made;

(b) on each of said strips engaging a first edge of a flexible wrapper over said teeth and pressing down until said teeth project thru said wrapper;

(c) drawing sequential strands across said board adjacent each respective one of said comb-like strips and breaking at least one of said strands laterally out through sequential pairs of teeth of each of said comb-like strips; and,

(d) folding said wrapper over said strand bundle and engaging a second edge of said wrapper opposite said first edge over said teeth to be detained by said detent tips.

4,424,628

SHAVING APPARATUS

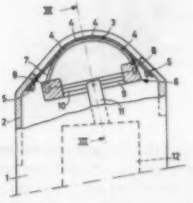
Gerrit J. Groothuis, and Eduard W. Tietjens, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 85,158, Oct. 15, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,320

Claims priority, application Netherlands, Nov. 21, 1978, 7811437

Int. Cl.³ B26B *19/64*

U.S. Cl. 30—43.92 **2 Claims**



1. A shaving apparatus comprising a shear plate with hair entry apertures; a cutting member associated with and reciprocatory relative to the shear plate, said cutting member including a frame formed from longitudinally extending oppositely disposed strips interconnected at their opposite ends by cross members; and cutting elements extending from said cutting member toward the shear plate, each cutting element being constituted by a semi-circular rigid supporting lamelliform plate member secured in the oppositely disposed strips, a groove being formed in the semi-circular edge of the lamelliform plate member facing the shear plate, and a single cutter in the form of a filament positioned in said groove and secured at its ends to said oppositely disposed strips, said filamentary cutter being in contact with said shear plate.

4,424,629

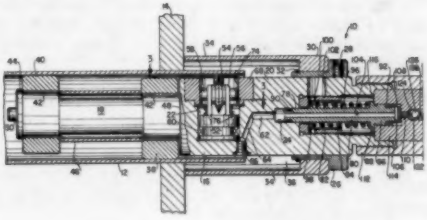
APPARATUS FOR CUTTING TUBES AND THE LIKE

Donald E. Schott, Chester, Vt., assignor to Thomas C. Wilson, Inc., Long Island City, N.Y.

Filed Nov. 13, 1980, Ser. No. 206,548

Int. Cl.³ B23D *21/06*

U.S. Cl. 30—105 **12 Claims**



1. An apparatus for cutting a portion of a tube comprising:

a. housing means having a first end and a second end, the first end being configured and dimensioned for insertion into the tube to be cut;

b. cutting means movably positioned within said housing means so as to be disposed adjacent the inner wall surface of the tube portion to be cut when the first end of the housing means is inserted within the tube;

c. hydraulic means for both advancing said cutting means outwardly toward the tube portion so as to cause said cutting means to forcibly cut the inner wall surface of the

tube to be cut and also for rotating the housing means so as to cause said cutting means to traverse a substantially inner circumferential path and to cut the inner wall of the tube to a predetermined depth corresponding to the level of penetration of said cutting means into the wall of the tube to be cut; and

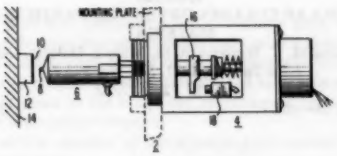
d. means cooperating with said hydraulic means for increasing the cutting force applied by said cutting means against the inner wall of the tube up to a predetermined and controlled force so as to cause said cutting means to correspondingly further penetrate the tube.

4,424,630

APPARATUS FOR MEASURING THE DIMENSIONS OF DELICATE PARTS

John G. Aceti, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 29, 1981, Ser. No. 335,512
Int. Cl.³ G01B 7/28
U.S. Cl. 33—174 L **13 Claims**



1. Apparatus for measuring a given dimension of a yieldable part comprising:

transducer means including a tactile member, said transducer means being movable between a reference position and a measurement position, said tactile member being movable when said tactile member contacts said yieldable part with a given force;

first means for sensing the movement of said tactile member when said tactile member contacts said yieldable part and for providing an indication when said transducer means is in said measurement position;

second means for sensing the position of said transducer means when said transducer means is in said reference position;

means for driving said transducer means in a first direction such that said transducer is moved from said reference position to said measurement position and for driving said transducer means in a second direction from said measurement position to said reference position, said means for driving being responsive to a pulsed signal such that said transducer is moved a given linear amount for each pulse of said pulsed signal;

means for providing said pulses signal to said means for driving; and

means for counting the number of pulses of said pulsed signal provided to said means for driving to move said transducer from said reference position to said measurement position, said given dimension of said yieldable part being determined from said number of pulses.

4,424,631

ELECTRICAL COMPASS

Jeffrey L. Franks, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

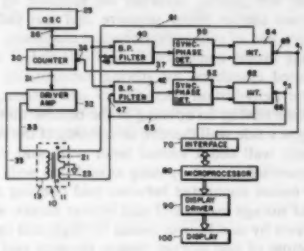
Filed Mar. 2, 1982, Ser. No. 353,896
Int. Cl.³ G01R 33/02; G01C 17/30
U.S. Cl. 33—361 **16 Claims**

1. A control circuit for use with an electrically operated magnetic field detector employing a flux-gate sensor comprising:

an oscillator for providing clock frequency output signals;

counter means coupled to said oscillator and responsive to said clock frequency signals therefrom for providing an excitation frequency signal for a flux-gate sensor and for providing a synchronization signal at a harmonic frequency of said excitation frequency;

bandpass filter means coupled to said oscillator and including means for receiving signal information from a flux-



gate sensor and responsive to signal information and signals from said oscillator to provide signals at said harmonic frequency of said excitation frequency; and

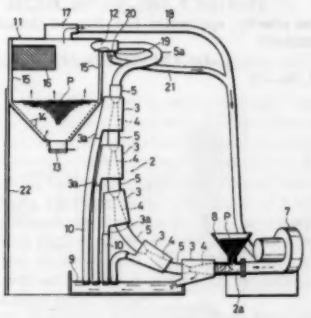
detection means coupled to said filter means and to said counter means and responsive to the synchronization signal and signals from said filter means for providing output signals representative of the orientation of a flux-gate sensor to an external magnetic field.

4,424,632

SYNTHETIC RESIN PELLET DEHYDRATING APPARATUS

Kensaku Nakamura, 272-1, Besso-cho, Matsubara-shi, Osaka, Japan

Filed Dec. 2, 1981, Ser. No. 326,605
Int. Cl.³ F26B 17/10
U.S. Cl. 34—57 R **2 Claims**



1. A resin pellet dehydrating apparatus comprising

a plurality of interconnected dehydrating chambers having an entry end and an exit end, and positioned to be substantially vertically oriented with one chamber on top of the next adjacent chamber and with the entry end at the bottom and the exit end at the top, each said chamber comprising a truncated conically shaped dehydrating screen for removing water from wet pellets and means for collecting and draining said removed water, each said screen being connected and disposed to each other so that the direction of travel of wet pellets will be upwardly and from a larger diameter portion toward a smaller diameter portion of each screen;

means for forcibly feeding wet pellets mixed with air into

said entry end of said chambers, whereby said pellets are forcibly directed upwardly against said screens thereby to cause moisture on the surface of said wet pellets to be removed by said screen and drained by said means for collecting, said wet pellets moving successively through each chamber to exit at said exit end, and wherein said means for forcibly feeding comprises a blower means for supplying air under pressure and feeding means connected between said blower means and said entry end for feeding said wet pellets, whereby air supplied by said blower means carries under pressure said wet pellets into said entry end of said interconnected chambers;

storage means connected to said exit end of said interconnected chambers, for storing substantially dried pellets after dehydration operation of said screens, said storage means having an opening at the bottom thereof, an opening at a side wall thereof, an opening at the top thereof, an outer wall and a vented inner wall, said exit end being connected to said opening at said side wall; and

pipe means connected between said opening at said top of said storage means and said blower means, whereby air is drawn by said blower means through said opening in said bottom of said storage means, through said vented inner walls, through said opening at said top of said storage means, through said pipe means, through said blower means, through said feeder means whereat said wet pellets are mixed therewith, through said entry end of said interconnected chambers and upwardly through said interconnected chambers, whereat said wet pellets are forcibly directed against said truncated conically shaped screens to remove moisture from the surface of said pellets, through said exit end of said chambers, and through said opening in said side wall of said storage means into said storage means, whereby said pellets are substantially dried in said chambers and placed in said storage means.

4,424,633

APPARATUS FOR HEATING AND DRYING ARTICLES

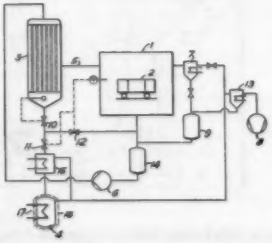
Karl-Heinz Bernhardt, and Helmut Strzala, both of Braunfels, Fed. Rep. of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Oct. 9, 1981, Ser. No. 310,316

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038493

Int. Cl.³ F26B *21/14*

U.S. Cl. 34—75 **7 Claims**



1. Apparatus for heating and drying articles under vacuum by the condensation heat of the vapor of a solvent comprising:

an evacuable drying chamber containing therein articles to be dried;

a vacuum pump means for evacuating said drying chamber;

thin film evaporator means supplying to said drying chamber a first liquid evaporated in said thin film evaporator means, the vapor of said first liquid being condensed within said drying chamber on said articles to be dried;

a first condenser connected to said drying chamber for condensing a part of said solvent vapor;

a second condenser connected by a throttle valve to said first condenser;

a separation tank which collects condensate from said first and said second condensers;

a collecting container wherein said condensed first liquid and a second liquid having a higher boiling point than said first liquid are collected, said collecting container being refilled with condensate from said separation tank;

a feed pump feeding back a mixture of said first and said second liquid to said thin film evaporator wherein said first liquid is evaporated to a residual concentration in said second liquid;

pressure barrier means through which said second liquid with a residual concentration of said first liquid escapes in re-evaporator means wherein the residual concentration of said first liquid is lowered by evaporating said first liquid, the vapor of which condenses in said second condenser; and

oil collecting container means for collecting said second liquid.

4,424,634

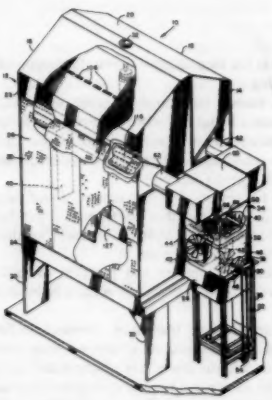
MODULAR COLUMN DRYER FOR PARTICULATE MATERIAL

Christianus M. T. Westelaken, St. Mary's, Ontario, Canada

Filed Jun. 19, 1981, Ser. No. 275,311

Int. Cl.³ F26B *17/12*

U.S. Cl. 34—167 **8 Claims**



1. A gravity flow dryer for particulate material comprising:

a vertical dryer housing having at least one generally vertical drying column for drying the particulate material;

a removable drying column module supported in the housing and comprised of at least one support member and a first pair of generally vertical side panels having perforations therein, said side panels being fixed to the support member to form a generally vertical drying column adapted to receive particulate material and direct the material vertically downwardly through the housing for drying the particulate material and providing essentially all of a drying column for the dryer;

means for introducing moist particulate material into a top portion of the drying column module;

means for introducing drying air into the drying column module through the perforations in at least one of the side panels for drying the particulate material in the drying column module; and

means for removing dried particulate material from a bottom portion of the drying column module.

4,424,635

SHOE HEEL STRUCTURE FOR A WOMAN'S SHOE

Henri R. Jourdan, Romans, France, assignor to Polyplastiform, France

Filed Sep. 16, 1981, Ser. No. 302,743
Claims priority, application France, Jun. 19, 1981, 81 12146
Int. Cl.³ A43B *21/20, 21/36*
U.S. Cl. 36—34 A 1 Claim

1. A shoe heel particularly for a woman's shoe, the heel being of the type having a molded body with a distal end of small cross-sectional area, a molded replaceable wear piece made of an abrasion resistant material and means for coupling the wear piece to the body, the improvement wherein said means for coupling comprises

a first tubular member of non-circular cross section molded into said body,

said first member having a longitudinal slot filled with the material from which said body is molded,

said first member being substantially hollow and having an end open at the distal end of said heel; and

a second tubular member of non-circular cross section fixedly attached at one end to said wear piece,

said second member being shaped and dimensioned to be tightly telescopically received in said first member so that said wear piece abuts said distal end of said body,

said second member having a longitudinal slot aligned with said slot in said first member,

said second member and said slot being filled with molding material such that the material filling said first and second slots is in contact when said second member is received in said first member, thereby increasing the frictional engagement between said members to inhibit separation thereof.

4,424,636

BUCKLE FASTENER, NOTABLY FOR SPORTS FOOTWEAR

David C. Everest, Boulder, Colo., assignor to Lange International S.A., Fribourg, Switzerland

Filed Jun. 22, 1982, Ser. No. 390,838
Int. Cl.³ A43B *11/00;* A43C *11/14;* A44B *21/00*
U.S. Cl. 36—50 6 Claims

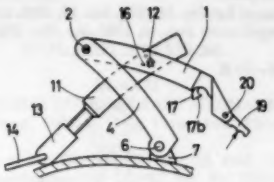
1. A buckle fastener for closing two portions of a ski boot or like sports footwear, which comprises:

a coupling member adapted to interconnect the two portions of the boot;

means for anchoring a first end of said coupling member to a catch adapted to be secured to one portion of the boot;

a latch pivoted to the end of at least one arm having its other end pivoted about a pin carried by a support adapted to be secured to the other boot portion, a spring mounted about a pivot pin interconnecting said coupling member and said latch constantly urging said coupling member toward the boot surface;

means for locking said latch in relation to the pivot pin interconnecting said arm and said support in the closed position



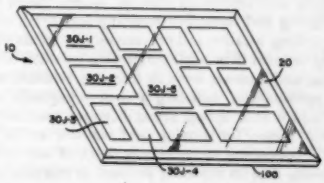
of the device, and an auxiliary control member mounted to said latch for releasing said latch.

4,424,637

GALLERY PICTURE FRAME

David J. Leahy, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Dec. 21, 1981, Ser. No. 332,421
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 12 Claims



1. A display device for a plurality of snapshots and the like which comprises:

a mounting panel comprised of an adhesive coated cardboard or paper backing sheet overlaid with a release sheet removable from said adhesive coated backing sheet in a plurality of sections of predetermined sizes and shapes to form a plurality of mounting sections with exposed adhesive therein, said adhesive being a pressure sensitive adhesive of a reuseable type permitting secure bonding between the snapshot and said mounting section, and yet permitting manual removal of the snapshots therefrom and replacement of said removed snapshots with substitute snapshots in said mounting section;

a translucent front panel, and

a middle panel releaseably located between the front panel and mounting panel without adhesively securing any one of said panels to any other of said panels, said middle panel having portions defining a plurality of cutout sections therein, the cutout sections corresponding substantially to the size and shape of the mounting sections, and

means for holding the mounting member, middle panel, and front panel together in locked position, said means being releasable to permit separation of the mounting member, middle panel and front panel and relockable to hold the mounting member, middle panel and front panel together in locked position, said means comprising a frame member having at least one pair of adjacent arms which are detachable and relockable at a common joint.

4,424,638

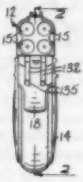
HANDGUN

Robert L. Hillberg, Cheshire, Conn., assignor to COP, Inc., Torrance, Calif.

Continuation of Ser. No. 111,870, Jan. 14, 1980, abandoned. This application Jun. 16, 1982, Ser. No. 388,934

Int. Cl.³ F41C *19/14, 19/00*

U.S. Cl. 42—69 R **18 Claims**



1. A handgun comprising a frame, a barrel assembly supported on said frame and including a plurality of barrels, each of said barrels having an associated cartridge chamber, a trigger supported on said frame for movement between ready and firing positions, a hammer pivotally supported on said frame for movement between releasing and striking positions, a firing element supported on said hammer for rotary indexing movement in one direction relative to said hammer to successive striking locations, said firing element in each of its striking locations being aligned with an associated one of said cartridge chambers, indexing means for rotating said firing element to one of its striking locations in response to movement of said hammer to its releasing position, means for biasing said indexing means in the direction of said striking position and toward engagement with said firing element, detent means for accurately aligning and releasably retaining said firing element in said one striking location and preventing retrograde rotation of said firing element from said one striking location, strut means for biasing said hammer from its releasing position toward its striking position and including a strut engageable with said hammer and a strut spring acting between said strut in said frame, sear means for moving said hammer to its releasing position in opposition to the biasing force of said strut means and releasing it in its releasing position in response to movement of said trigger from its ready position to its firing position, and stop means for arresting movement of said strut in the direction of said striking position, said strut means being out of engagement with said hammer during the initial portion of the travel of said hammer toward its releasing position in response to movement of said trigger from its ready position toward its firing position and during the final portion of the travel of the hammer from its releasing position to its striking position, said means for biasing said indexing means acting through said indexing means and said firing element and biasing said hammer toward its striking position when said trigger is in its ready position and during initial movement of said hammer toward its releasing position in response to movement of said trigger toward its firing position.

4,424,639

FISHING ROD HANDLE AND FASTENER

Donald J. Richardson, 15972 Dudley Rd., Brown City, Mich. 48416

Filed Aug. 25, 1981, Ser. No. 277,204

Int. Cl.³ A01K *87/00*

U.S. Cl. 43—18.1 **7 Claims**

6. In combination, a fishing rod handle and fastener for releasably securing a reel and rod to said handle and to angularly align said rod with said handle and prevent relative rotation of said rod with respect to said handle comprising:

a retaining element;

a threaded bore formed in said retaining element;

a screw having a head and threaded shank engageable with said threaded bore, a recess formed along the shank adjacent the head;

a bore formed in said handle to receive said screw;

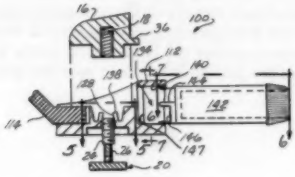
an inward directed radially moveable finger provided along said bore;

said finger moved radially away from said threaded shank as said screw enters said threaded bore, said finger entering said recess when said retaining element is tightened;

a projection formed on said retaining element;

a recess formed in said handle slidingly engageable with said projection;

said recess being limited in length to limit the axial move-



ment of said projection and prevent withdrawal of said threaded shank;

a horizontal bore formed in said handle to receive an end of said rod;

a radial projection formed on the rod end;

a radial recess formed in the bottom of said horizontal bore

a horizontal projection extending outward from said radial projection; and

wherein said radial projection is engageable with said radial recess to align said rod angularly with said handle, and said horizontal projection and a portion of said reel sandwiched between said retaining element and said handle to releasably secure said rod to said handle.

4,424,640

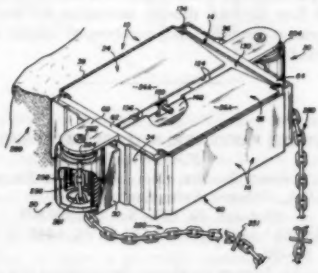
BINARY ANIMAL TRAP

Rodney G. Cook, 1500 California Ave., Camden, Ark. 71701

Filed Aug. 20, 1981, Ser. No. 294,559

Int. Cl.³ A01M *23/26*

U.S. Cl. 43—58 **27 Claims**



17. An aminal trap comprising:

rigid, box-like housing means adapted to be concealed in an area likely to be visited by a target animal;

separate box-like, rigid jaw carriage means adapted to be releasably received within said housing means for capturing a target animal;

dog means operable in a set state to secure said carriage means relative to said housing means;

trigger means responsive to animal contact for releasing said dog means to free said carriage means;

thrust spring means for expelling said jaw carriage means from said housing means in response to release of said dog means;

said jaw carriage means comprising:

a pair of cooperating jaw members pivotally moveable between an untensioned set position and a triggered position;

jaw spring means operable when released for forcing said jaw members into said triggered position;

jaw spring catch means for yieldably maintaining said jaw spring means in a set position; and,

means for disabling said jaw spring catch means in response to expelling of said jaw carriage means thereby triggering said jaw members.

4,424,641

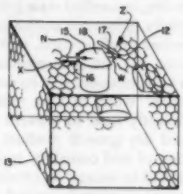
FEED POT LID

Garrett J. Kyte, Ewell, Md. 21824

Continuation of Ser. No. 866,914, Feb. 3, 1978, abandoned. This application Aug. 15, 1979, Ser. No. 66,661

Int. Cl.³ E05D *7/084;* **A01K** *69/06*

U.S. Cl. 43—102 **11 Claims**



1. A feed pot lid, which is made in one piece, and has a center which is three fourths round, and one fourth straight, means with said feed pot lid for permitting both slidable and pivotal movement thereof in relationship to a wire mesh marine life trap having a bait feed pot with an opening to the outside of the trap which the feed pot lid as installed normally covers including from the straight part of the lid a single extension which points away from the center, then loops, and points back to the center resulting in an open loop forming slidable and pivotal hinge structure extending from the straight part of the lid which is easily insertable into and engageable with the wire mesh of the trap, and further means provided with said feed pot lid for fastening the lid in a closed position over the opening of the feed pot of the trap including on the opposite round end of the center part, another single extension which points away from the center and then loops back toward the center, making a hook.

4,424,642

WATER STRIPPABLE ADHESIVE

Catherine E. Stubler, Morristown, N.J.; George N. Palmer, Wilmington, Del., and Paul J. Albee, Bensalem, Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 20, 1981, Ser. No. 285,203

Int. Cl.³ A01M *1/14;* **A01N** *25/24*

U.S. Cl. 43—114 **4 Claims**

1. A method of trapping insects comprising the steps of:

coating an effective trapping amount of an adhesive composition onto a substructure the adhesive composition comprising:

a tacky component selected from the group consisting of: ethylene vinyl acetate copolymer and oxidized ethylene vinyl acetate copolymer, the ethylene vinyl acetate copolymer containing from 35 to 45 percent by weight of a vinyl acetate moiety and having a molecular weight from 2,500 to 5,000;

polyvinyl alcohol having a molecular weight from 2,000 to 25,000. the weight ratio of polyvinyl alcohol to tacky component being from 3:1 to 1:2; an emulsifier; and water;

trapping the insects which land on an adhesive to the coating composition; and

washing the adhesive composition and insects off of the substructure with water.

4,424,643

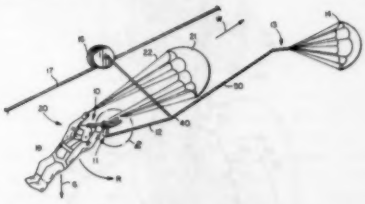
TOY PARACHUTE RELEASE MECHANISM

Bill M. Tilghman, 5604 W. Palo Verde Ave., Phoenix, Ariz. 85302

Continuation of Ser. No. 206,472, Nov. 13, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,557

Int. Cl.³ A63H *33/20;* **B64C** *31/06;* **F41J** *9/08*

U.S. Cl. 46—86 R **1 Claim**



1. In combination with a toy parachute for being attached to a kite string and for, after traveling up said string with the wind, being released from said string for free flight to the ground, said toy parachute including,

a weight,

a parachute having a canopy and a plurality of shroud lines, said shroud lines being separately attached to said canopy at their upper ends and attached to said weight at their lower ends, and

carrier means, connected to said weight, for releasably movably engaging said kite string,

the improvement in said toy parachute comprising,

(a) a flight device comprising at least one member having surfaces generally shaped, contoured and dimensioned such that movement of said device through the air provides aerodynamic lift for said device,

(b) means for detachably connecting said flight device to said toy parachute, said connecting means comprising a fulcrum-lever pair including

(i) an elongate lever member carried by said flight device and having

a central portion, and

first and second end sections each attached to said central portion of said lever member,

(ii) a fulcrum member carried by said toy parachute and shaped to detachably receive said lever member,

said lever member contacting said fulcrum member at at least a pair of points while said carrier means engages said kite string,

(iii) a first point at which said central portion of said lever member contacts and turns about said fulcrum member, and

(iv) a second point at which said second end section of said lever member contacts said fulcrum member,

said fulcrum member and lever member being shaped and dimensioned such that

(v) while said carrier means engages said kite string, the force of gravity acting on said flight device pulls said flight device and said first end section of said lever member downwardly and rotates said central section of said lever member about said fulcrum member, forcing said second end section of said lever member upwardly against said fulcrum member at said second point of contact to maintain said lever-fulcrum pair in engagement, and

(vi) said lever-fulcrum pair separate when said carrier

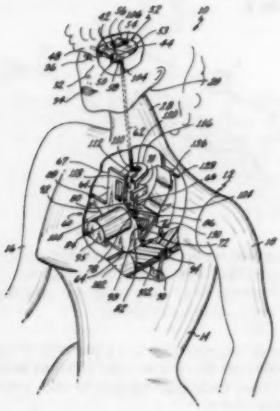
means is released from said string so that said flight device and said toy parachute separately free flight to the ground.

4,424,644

WINKING APPARATUS FOR FIGURE TOY

Jurgis Sapkus; Charles D. Clarke, both of Manhattan Beach; J. Stephen Lewis, Pacific Palisades, and James P. Mills-Winkler, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 6, 1981, Ser. No. 232,072
Int. Cl.³ A63H 3/48
U.S. Cl. 46—135 R 1 Claim



1. In combination with a figure toy of the type which includes a torso having a neck portion and a head having a neck portion connected to the neck portion of said torso, said head including a skull, a soft polymeric skin covering said skull and a pair of simulated eyes provided on said skin, the improvement which comprises:

(A) a socket provided on the neck portion of said torso;

(B) a bulbous configuration provided by the neck portion of said head, whereby said head and said torso may be articulately connected together for rotation with respect to each other;

(C) an arcuate slot provided in said head above at least one of said simulated eyes;

(D) a simulated eyelid mounted in said arcuate slot, said simulated eyelid having a first end disposed outside of said head and a second end disposed inside said skull;

(E) an eyelash affixed to said first end of said simulated eyelid;

(F) means affixed to said second end of said simulated eyelid for moving said simulated eyelid from a normally open position to a closed position with respect to at least one of said simulated eyes, whereby said figure toy may be made to simulate a winking action, said moving means including:

(i) a first plate affixed to said second end of said simulated eyelid;

(ii) a pivot swingably mounting said first plate to said skull;

(iii) a rod having a first end pivotally coupled to said first plate, an intermediate portion extending through said neck portions and a second end extending into said torso;

(iv) a motion-translating mechanism mounted to said torso, said motion-translating mechanism including a second plate having an elongated slot provided therein, said second end of said rod being received within said elongated slot; and

(v) first and second stop members affixed to said second end of said rod above and below said second plate, respectively, whereby said rod will transmit motions from said motion-translating mechanism to said first plate regardless of the amount said head is rotated with respect to said torso.

4,424,645

GROWTH SUBSTRATE BED

Pertti K. Rannali, Turku, Finland, assignor to Farmos-Yhtyma Oy, Turku, Finland

Filed Aug. 28, 1981, Ser. No. 297,124
Claims priority, application Finland, Oct. 23, 1980, 803329
Int. Cl.³ A01G 9/10
U.S. Cl. 47—66 11 Claims

1. A growth substrate bed consisting of:

a flexible, rollable, container capable of assuming a first rolled configuration and a second unrolled configuration; and

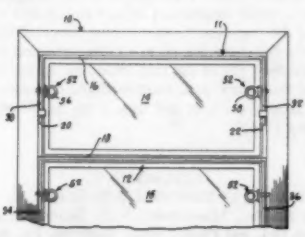
a dry particulate growth medium in pellet form capable of swelling when water is added thereto, said growth medium when in its dry, unswelled state being evenly distributed in and partially filling said container when said container is in its rolled configuration, said growth medium when in its wetted, swelled state substantially filling said container when said container is in its unrolled configuration, said container when in said rolled configuration being held sufficiently tight to prevent a substantial displacement of said dry growth medium during handling and transportation of said container such that when said container is unrolled to assume its unrolled configuration and said dry growth medium is wetted, said growth medium needs no repositioning.

4,424,646

VENT-TYPE WINDOW WITH EMERGENCY EGRESS MOUNTING

Sherman C. Adams, Bradenton, Fla., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Apr. 14, 1982, Ser. No. 368,101
Int. Cl.³ E05B 65/10
U.S. Cl. 49—141 11 Claims



1. In a vent-type window structure, in combination,

(a) a vent sash including two opposed jamb members each having a first surface facing toward the center of the sash and a second surface facing away from the center of the sash;

(b) a pair of hinges respectively disposed adjacent said jamb members for mounting the sash for angular movement about an axis of rotation parallel to the dimension of the sash between the jamb members, each of said hinges including a portion overlying the second surface of the jamb member adjacent that hinge;

(c) each of said jamb members having an opening extending between the first and second surfaces thereof, and each of said hinge portions having an opening in register with the opening of the jamb member adjacent that hinge portion;

(d) a pair of pins for respectively securing said jamb members to said hinges, each of said pins including

(i) an axially rectilinear shaft extending entirely through the opening in one of said jamb members and the opening in the hinge portion overlying that jamb member and having an end portion projecting beyond said last-mentioned hinge portion away from the center of the sash,

(ii) a manually engageable portion secured to said shaft and projecting from the first surface of said one jamb member toward the center of the sash, for enabling a manual pulling force to be exerted on the pin in a direction toward the center of the sash; and

(iii) means carried by said end portion and abutting said last-mentioned hinge portion adjacent the opening therein for yieldably resisting movement of the shaft toward the center of the sash, thereby to maintain the pin in position securing said one jamb member to the last-mentioned hinge portion, said abutting means being yieldable, upon subjection of the pin to a sufficient manual pulling force exerted in a direction toward the center of the sash, to permit axially directed displacement of said shaft out of the openings through which the shaft extends as the pin is pulled toward the center of the sash, for releasing the sash from said hinges,

said pins being the only means positively securing said sash to said hinges.

4,424,647

WINDOW PANE SUPPORTER IN MOTOR CAR

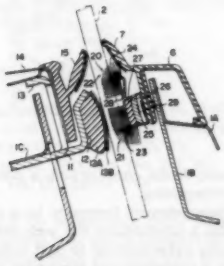
Toshihiro Sasaki; Hiromi Ikehata, both of Toyota, and Ryoichi Fukumoto, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Mar. 13, 1981, Ser. No. 243,572

Claims priority, application Japan, Mar. 17, 1980, 55-33576

Int. Cl.³ B60J *5/04*

U.S. Cl. 49—502 **8 Claims**



1. A window pane supporter, in an upper portion of a door of a motor vehicle, for vertically movably supporting the pane in the width-wise direction of the vehicle, comprising:

weather strips at top portions of an inner plate and outer plate of the door, said weather strips abutting against inner and outer surfaces of the pane;

a cleaning means elastically supported by the outer plate and lower than said weather strip, said cleaning means including a brush abutting against the outer surface of the pane for cleaning the outer surface of the pane; and

a support portion lower than said cleaning means for supporting the pane in the width-wise direction of the vehicle.

4,424,648

LAPPING TOOLS

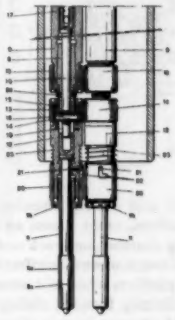
Pierre A. Largeteau, Bezonz, France, assignor to S.A. Automobiles Citroen and Societe Automobiles Peugeot, both of Paris, France

Continuation of Ser. No. 125,451, Feb. 25, 1980, abandoned. This application Mar. 23, 1982, Ser. No. 360,939

Claims priority, application France, Nov. 3, 1977, 77 33677

Int. Cl.³ B24B *25/00*

U.S. Cl. 51—1 **5 Claims**



1. In a lapping machine comprising a rotatable spindle, a lapping tool connected to said spindle and an axially displaceable expansion rod operable to vary the diameter of said tool, the improvement wherein said tool comprises:

an elongated tubular member having a working portion formed at one end thereof with a substantially cylindrical abrasive external surface and a frustoconical internal surface, at least said working portion being provided with at least one slot throughgoing between said surfaces and elongated along a generatrix;

a control rod having a frustoconical portion axially slidable within said working portion and cooperating with said frustoconical internal surface for adjusting the diameter of said working portion by relative axial displacement of said rod and said member;

means for connecting said tubular member to said expansion rod, said means for connecting said tubular member to said expansion rod including a support tube coaxially surrounding said control rod, a key fixed to said support tube and passing through said expansion rod and longitudinal slots of said control rod and a screwthread coupling between said tubular member and said support tube for axially adjusting said working portion of said tubular member relative to said control rod; and

means for fixing said control rod to said spindle to prevent axial movement of the frustoconical portion of said control rod during rotation of said tubular member by said spindle and axial displacement of said expansion rod to adjust the diameter of said working portion.

4,424,649

ABRASIVE CUTTER

Donald P. Vincent, Lake Zurich, and Hubert J. Thomiszer, Skokie, both of Ill., assignors to Buehler Ltd., Lake Bluff, Ill.

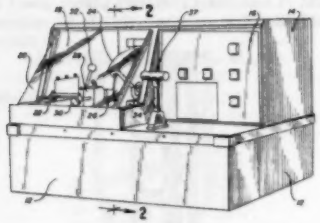
Filed Aug. 24, 1981, Ser. No. 295,711

Int. Cl.³ B24B *7/02*

U.S. Cl. 51—92 R **6 Claims**

1. A cutter machine comprising, in combination, a motor-driven cutting wheel mounted in a cutting chamber for rotation about a horizontal axis extending from side-to-side relative to said machine, a workpiece holder carried on a platform mounted forwardly of said cutting wheel for horizontal sliding movement in said cutting chamber along a straight line in a front-to-back direction relative to said machine, a manually

operable generally upwardly extending workpiece advance lever located substantially forwardly and to one side of said platform to afford convenient access to an operator and yet be remote from said cutting chamber, said advance lever being connected at its lower end to a rotatable platform drive shaft, said drive shaft extending laterally from the lower end of said



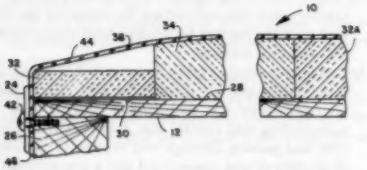
advance lever into said cutting chamber to a location forwardly of said platform, crank means mounted on said drive shaft in said cutting chamber, and rack and pinion drive means operated from said crank means for effecting rearward sliding movement of said platform when said advance lever is pivoted rearwardly and effecting forward sliding movement of said platform when said advance lever is pivoted forwardly.

4,424,650

ROOF INSULATION SYSTEM AND METHOD

Paul L. Van Note, 1990 Starkey Rd., Largo, Fla. 33541

Filed Aug. 10, 1981, Ser. No. 291,231
Int. Cl.³ E04B 7/00
U.S. Cl. 52—96 **22 Claims**



1. A roof insulation system for a building having sidewalls and an upper supporting surface, comprising in combination:

first substantially rigid insulation means disposed about the periphery of the upper supporting surface of the building;

second flexible insulation means disposed within the central area defined by said first substantially rigid insulation means for insulating the entire upper supporting surface of the building;

flexible waterproof covering means disposed upon said first and second insulation means;

said first insulation means being substantially more rigid than said second insulation means to add mechanical strength around the periphery of the upper support surface enabling said first insulation means to support said flexible waterproof covering means from the periphery of the upper supporting surface and said second insulation means supporting said flexible waterproof covering means from the central area of the upper supporting surface; and

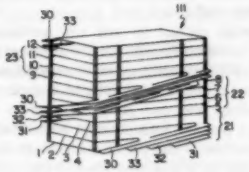
sealing means for sealing the terminating ends of said flexible waterproof covering means to the building in proximity to the periphery of the upper supporting surface thereby producing a waterproof insulating roof system.

4,424,651

MULTI-EXIT PARKING GARAGE

Hyong Lee, 383-253, Sutek-ri, Kuri-ep, Namyangju-gun, Kyonggi-do, and Chul H. Kim, 127-29, Hongji-dong, Chongro-ku, Seoul, both of Rep. of Korea

Filed Apr. 15, 1982, Ser. No. 368,586
Claims priority, application Rep. of Korea, Apr. 17, 1981, 2756
Int. Cl.³ E01F 9/00
U.S. Cl. 52—175 **2 Claims**



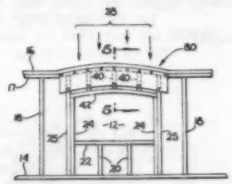
1. A parking garage building comprising a plurality of stories, each story having parking places marked thereon, said plurality of stories being divided into blocks of several stories each, an access ramp connected to each story, and a plurality of egress ramps attached to said building, each egress ramp ascending from ground to one of said blocks without access to any lower block, each egress ramp having access to each story of its associated block.

4,424,652

PRE-CAMBERED STEEL BEAM

Arthur R. Turner, 29 Healey Rd., Dandemong, Victoria, Australia

Filed Oct. 31, 1980, Ser. No. 202,629
Int. Cl.³ E04B 1/26; E06B 1/04
U.S. Cl. 52—204 **22 Claims**



1. In wood frame construction, a composite load bearing structure, comprising:

a metal beam element formed to have a cross section which includes a substantially flat web and at least one flange generally perpendicular to said web, said beam element having a predetermined precamber along its longitudinal axis and parallel to said web when not subjected to a load;

a wood frame construction element spanning a length over which a load is to be supported, said wood frame construction element being initially bowed in a direction opposite the deflection said load would produce and in an amount substantially equal to said precamber of said metal beam element;

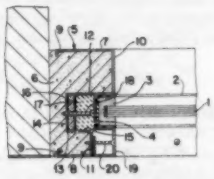
said wood frame construction element being disposed to abut both said first flange and said web along their length such that said precamber of said metal beam element is substantially coincident with said bow in said wood frame construction element, the amount of said precamber being predetermined so that said composite load bearing structure will deflect to a substantially straight and uncambered condition under the intended load; and

fastening means for fastening said metal beam element to said wood frame construction element.

4,424,653
FIRE-PROOF WINDOW

Hans-Dieter Heinen, rue Catherine Andre' 15, 4890 Malmedy, Belgium

Filed Dec. 10, 1980, Ser. No. 215,058
Claims priority, application Belgium, Oct. 10, 1980, 202414
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—213 **2 Claims**



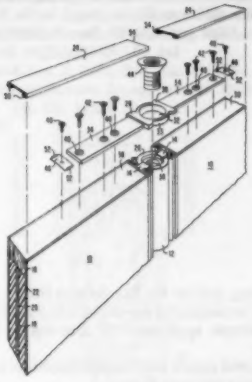
1. A fire-proof window comprising: a frame of U-shaped section forming an inner continuous groove,
a pane of glass in said inner continuous groove, means sealing said pane in said inner continuous groove providing a sealing joint,
tongue means made of a heat-expandable material placed in said inner continuous groove between the base of said inner continuous groove and the sealing joint so as to enable it to swell up and replace the sealing joint as the latter burns and reduces when heated under the effect of fire, thereby to keep the fire-proofing properties of the window,
a casing formed with an inner longitudinal groove to accommodate said frame,
a flexible elastic element placed against the bottom of said inner longitudinal groove over the entire length thereof,
a rigid element made of heat-insulating material extending on and along said flexible elastic element and extending along the periphery of the frame, and
adjustable clamping means to adjustably compress the flexible elastic element so as to properly and tightly position the frame within the casing.

4,424,654
PANEL RIGIDIZER

William C. Anderson, Cascade, and Richard H. Wolters, Grand Rapids Township, Kent County, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1981, Ser. No. 291,742
Int. Cl.³ E04H *3/00*
U.S. Cl. 52—239 **3 Claims**

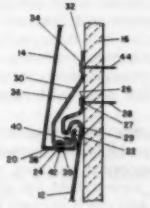
1. A panel rigidizer for maintaining linear alignment of a plurality of space dividing wall panels comprising:
at least first and second space dividing wall panels having connector means on each end thereof;
a cylindrical post constructed and arranged to interconnect and support said first and second wall panels through said connector means, said cylindrical post having a threaded aperture in the top end thereof;
rigidizing means including a pair of linearly aligned leg portions and a hub portion therebetween, said hub portion including a tapered aperture therethrough;
means for securing one of said leg portions to the top edge of said first wall panel and the other of said leg portions to the top edge of said second wall panel whereby said tapered aperture in said hub portion overlies the threaded aperture in said cylindrical post, and
post cap means having a complimentary tapered portion and a threaded portion, said post cap means extending through said tapered aperture in said hub portion of said rigidizing means whereby said complimentary tapered portion seats within said tapered aperture when the threaded portion of said post cap means is threaded into the threaded aperture in said cylindrical post.



4,424,655
COMPENSATING CLIP FOR SIDING

John W. Trostle, Allison Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 27, 1981, Ser. No. 287,025
Int. Cl.³ E04D *1/34, 1/00*
U.S. Cl. 52—520 **5 Claims**



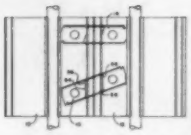
1. In combination with horizontal siding panels having a fastening portion along the upper edge, a longitudinal groove opening away from the upper edge on the panel face below the fastening portion, and a hooked flange portion along the lower panel edge projecting at an acute angle from the panel face toward the panel back for engagement with the groove on the face of an adjacent panel, a clip device comprising:
(a) an upper fastening leg for attachment to a building structure, said leg having a generally vertically elongated opening therethrough;
(b) an integral medial leg projecting downwardly from the terminal end of the fastening leg and outwardly from the face of the fastening leg;
(c) an integral lower depending leg projecting at an acute angle from the face of said clip toward the back of the clip from the terminal end of the medial leg;
(d) said clip overlying a first horizontal siding panel near the groove of the panel upper edge and underlying a second hoizontal siding panel near the lower panel edge;
(e) said clip including a fastening means for attaching the lower depending leg of said clip to the lower hooked flange portion of the second horizontal siding panel to secure the siding panel to the building structure when panels are disengaged by relative vertical displacement of the panels.

4,424,656

ASSEMBLY CLIP FOR CEILING PANELS

Alonzo A. LaVanture, Schaumburg, Ill., assignor to Airtex Corporation, Chicago, Ill.

Filed Jun. 1, 1981, Ser. No. 269,357
Int. Cl.³ E04C 1/10
U.S. Cl. 52—584 31 Claims



1. A ceiling, wall or the like formed from a group of panels and able to be assembled on-site in side-by-side fashion by the quick and simple application of coupling or locking devices comprising:

first and second panels positioned adjacent to each other, each having front and rear faces;

an assembly clip defining a flat surface;

a panel retainer arrangement on each of said panels;

a clip retainer arrangement on said assembly clip;

said assembly clip being dimensioned to permit unrestrained vertical movement of said assembly clip until said flat surface thereon abuts a rear surface of said first and second panels when said assembly clip is in a first rotational position with respect to said panels;

said clip retainer arrangement engaging said panel retainer arrangement when said assembling clip surface abuts said rear face and said assembly clip is oriented in a second rotational position with respect to said panels, said assembly clip being movable between said first and second rotational positions about an axis which is perpendicular to one of said faces of said panels, said panel retainer arrangements cooperating with said clip retainer arrangement to prevent lateral movement of said first panel with respect to said second panel;

said panel retainer arrangements including respective fixed surfaces on each of said first and second panels; and

said clip retainer arrangement including corresponding first and second flanges dimensioned for abuttment with said fixed surfaces when said clip is oriented in said second rotational position, said flanges being operative to urge said panels toward each other laterally with increasing rotation of said assembly clip.

4,424,657

APPARATUS AND METHOD FOR CARDING PIERCED EARRINGS AND THE LIKE

Frank V. Lawson, Jr., Cumberland, and Joseph C. Dionne, North Providence, both of R.I., assignors to R. N. Koch, Inc., Providence, R.I.

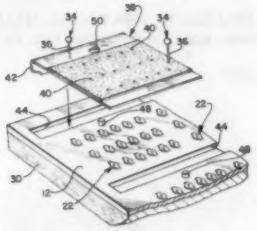
Filed Nov. 9, 1981, Ser. No. 319,750
Int. Cl.³ B65B 29/00
U.S. Cl. 53—111 R 2 Claims

1. An apparatus for orienting jewelry clutches and the like of the type having enlarged facing portions and reduced rear portions, in a predetermined array, said apparatus comprising:

a. a generally horizontally disposed, substantially flat planar plate having a plurality of apertures therethrough, said apertures being disposed to define said array and each being dimensioned to receive the rear portion of a clutch or the like with the corresponding facing portion of the clutch adjacent to the top surface of said plate;

b. retaining means extending substantially around the periphery of said plate for retaining clutches and the like on the upper plate surface;

c. vibrating means for vibrating said plate to cause jewelry clutches or the like disposed on the upper surface of said plate to be randomly moved, and reoriented thereon, whereby at least a portion of the rear portions of said clutches fall into said apertures, said plate further characterized as a metallic plate, said apparatus further comprising a fibrous dampening board having at least one recess in the upper surface thereof, said plate being adhered to said



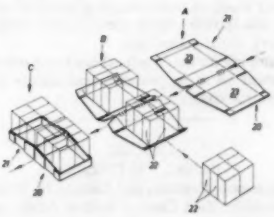
board in overlying relation with the apertures in the plate in communication with said recess to provide clearance beneath the apertures, said board acting to slightly dampen the vibration of said plate to further promote the desired orienting of the clutches or the like.

4,424,658

METHOD AND APPARATUS FOR THE PRODUCTION OF A DOUBLE PACKAGE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 24,621, Jan. 16, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,877
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 2737223
Int. Cl.³ B65B 11/08
U.S. Cl. 53—398 3 Claims



1. A process for the production and filling of an outer package having two partial packages (20, 21) with two inner packages, said two partial packages being disposed side by side and formed from one uniform blank, the packages being interconnected by a central wall erected by pushing the partial packages toward each other to produce double tray packages open on top with central panels (24, 25) forming the central wall, lateral panels (26,27) and outside panels (28) forming outer walls, the process comprising:

(a) horizontally conveying the blank, spread out flat, in cyclically changing periods of motion and stoppage, the central panels (24,25) being unfolded and extending in the direction of conveyance,

(b) in a first station engaging two spaced inner packages located on one side of the conveying path with separate pushing elements and pushing said inner packages in a single path and in a single direction transverse to the direction of conveyance of the blank, during a first phase of stoppage of the unfolded blank, so as to position the two inner packages spaced from each other by the width

of the central panels (24,25) on respective areas of the blank corresponding to the two partial packages;

(c) thereafter, while still in the first station, folding the central panels (24,25) between said spaced inner packages and the outside panels (28) into an intermediate folded position,

(d) pushing, in a second station, the two partial packages together, without changing the positions of the two inner packages relative to the two partial packages during a second phase of stoppage of the blank subsequent to and not continuous with the first phase of stoppage, thereby folding the central panels into an upright position (24,25) until the central wall abuts the two inner packages, and erecting the outer panels (28) into an upright position, and

(e) then erecting the lateral panels (26,27) into an upright position.

4,424,659

METHOD AND APPARATUS FOR PRODUCING A STERILIZABLE PACKAGE OF A PRODUCT, AND THE PACKAGED PRODUCT

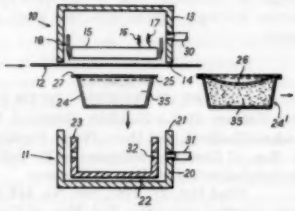
John A. Perigo, Hailey, Nr. Witney, and John E. Divall, Purton, both of England, assignors to Metal Box Limited, Reading, England

Filed Jan. 14, 1981, Ser. No. 224,885

Claims priority, application United Kingdom, Jan. 16, 1980, 8001407

Int. Cl.³ B65B *55/02*

U.S. Cl. 53—425 **29 Claims**



1. A method of producing a package of a product, which product does not include a significant amount of gas, comprising the steps of taking a shape retaining container made of a material which is softened at the temperature employed in heat-sterilization and which has a charging opening, charging the container with the product to a level which leaves a headspace, substantially eliminating permanent gas from the headspace, sealing the opening with a closure, and deforming the closure inwardly onto the product to reduce the headspace and continuing the deformation, to move product adjacent the closure into the remaining headspace, until the headspace is eliminated by the continued movement of product and closure, wherein:

(a) the sealing step is achieved by heat-sealing the closure around the opening,

(b) the closure is located against the sealing area of the container body before the headspace is eliminated,

(c) the closure is of stretchable material and in the deformation step is stretched beyond its elastic limit so as not to tend to return to its original form,

(d) the product charge is sufficiently liquid or mobile not to tend to assume any specific natural shape,

(e) the sealed package is heat sterilized, resulting in softening of the container material, and

(f) during heat sterilization an external pressure is maintained at least sufficient to prevent development of vapour in the package,

whereby a sterilized package is produced in which the integrity of the seal is preserved and, despite said softening, the container has the same shape as it had prior to heat sterilization.

4,424,660

APPARATUS FOR BINDING PAPER SHEETS

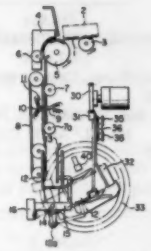
Koji Sato, Hiratsuka; Tadao Kato, Naka, and Hikaru Kawano, Ashigara-kami, all of Japan, assignors to Musashi Co., Ltd., Tokyo and Hitachi Denshi Engineering Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Jun. 2, 1981, Ser. No. 269,656

Claims priority, application Japan, Jun. 18, 1980, 55-81372

Int. Cl.³ B65B *35/50, 13/12*

U.S. Cl. 53—540 **3 Claims**



1. An apparatus for binding paper sheets stacked in a stack into bundles each consisting of a predetermined number of sheets, said apparatus comprising:

a hopper for holding the stack of sheets and a feeder roller in the bottom thereof for feeding sheets from the bottom of the stack;

a separating drum positioned adjacent said hopper to receive the paper sheets fed therefrom and to separate them and feed them out one by one;

belt means adjacent said separating drum for receiving the paper sheets fed from said separating drum and conveying them in a vertical path;

a counter positioned along said belt means and past which the paper sheets are conveyed by said belt means for counting the number of sheets conveyed;

a stacker disposed at the bottom end of said belt means at the discharge end thereof, said stacker having an open top through which the paper sheets are fed thereinto, a closed bottom on which the paper sheets are disposed on edge, spaced opposed sides, one of which has an opening therein, and open ends at the opposite ends of said sides;

means for pivoting said stacker about a horizontal pivot for movement between an upright sheet receiving position with the open end at the upper end thereof, and a generally horizontal sheet discharging position in which said stacker has the one side with said opening therein facing downwardly and the open top facing generally sideways;

a pressure plate movable into said stacker through said opening for pressing the paper sheets against the other side of said stacker, a lever pivotally mounted on said stacker and having said pressing plate on one end thereof and a counterweight on the other end;

the moment of said counterweight when said stacker is in the upright position being greater than the moment of said pressure plate, whereby said pressure plate is urged against the sheets being stacked in said stacker, and the moment of said counterweight being less than the moment of said pressure plate when said stacker is in the generally horizontal position, whereby said pressure plate is moved away from the stack of sheets through said opening for causing the stack of sheets to be supported on said one side of said stacker;

means for transferring the paper sheets disposed on said one side of said stacker when said stacker is in the sheet discharging position;

a binding mechanism including a support means for receiving thereon the paper sheets transferrred by said transferring means, said support means being stationary and sub-

stantially flush with said one side of said stacker when said stacker is in the sheet discharging position, and a flyer disposed about said support means and rotatable for binding the stack of paper sheets on said support means with a tape;

means positioned adjacent said flyer and movable against said tape and away from said tape for stamping information on the tape; and

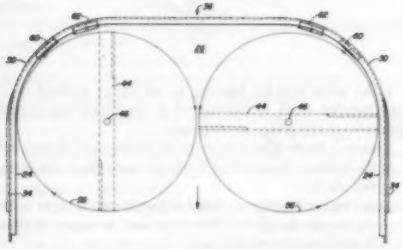
means for discharging the stamped bound stack of sheets out of said binding mechanism.

4,424,661

ANTI-WINDROWING ATTACHMENT FOR A ROTARY CUTTER

John Kulak, Port Colborne, Canada, assignor to Deere & Company, Moline, Ill.

Filed Jun. 21, 1982, Ser. No. 390,499
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—320.2 **11 Claims**



5. In a rotary agricultural mower adapted for forward movement over ground where material to be cut is present, a main housing including upper generally horizontal deck structure; side housing structures extending downwardly from either side of the deck structure and forming therewith a cutting compartment open in the downward and rearward directions; a pair of rotary cutting blades journalled in the deck structure for rotation about transversely spaced upright axes and defining cutting areas extending between the side housing structures; drive means for rotating the blades in opposite directions about the axes so that the blades pass in the rearward direction relative to the side housings to thereby direct cut material towards the center of the rearward opening and out of the cutting compartment; and means for preventing windrowing of the cut material near the center of the rearward opening, said means comprising a deflector supported inwardly adjacent each side housing structure, said deflector located substantially entirely radially outwardly of the cutting area in the quadrant of the mower housing bounded by a horizontal axis extending outwardly in the transverse direction and horizontal axis extending rearwardly in the fore-and-aft direction, both said axes intersecting the corresponding shaft axis, and wherein said deflector includes a downwardly directed surface for directing a portion of the cut material towards the ground adjacent the side housings outwardly of the path of rotation of the blades.

4,424,662

DRIVE APPARATUS FOR ROLL BALING MACHINE

Edward T. Eggers; John H. Freimuth; Richard E. Jennings, all of New Holland, and Willis R. Campbell, Ephrata, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 19, 1982, Ser. No. 399,607
Int. Cl.³ A01D *39/00*; B30B *5/06*
U.S. Cl. 56—341 **5 Claims**

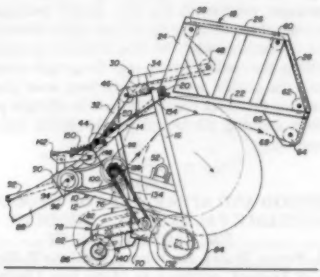
1. A roll baling machine comprising:

(a) a frame;

(b) a floor roller rotatably supported on said frame;

(c) an apron movably supported on said frame and cooperating with said floor roller for forming a roll bale of crop material;

(d) drive means connected between said floor roller and said apron for rotating said floor roller in response to movement of said apron in a first direction during bale formation; and



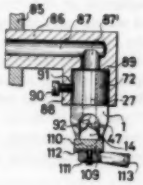
(e) said drive means including clutch means for drivingly disconnecting said floor roller from said apron in response to movement of said apron in a second direction which is opposite said first direction so that said floor roller will no longer be rotated by said drive means when said clutch means drivingly disconnects said floor roller and said apron.

4,424,663

THREAD SPLICING DEVICE

Joachim Rohner; Heinz Zumfeld; Reinhard Mauries, all of Monchen-Gladbach, and Hans-Jürgen Preuhs, Willich, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,402
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040588
Int. Cl.³ B65H *69/06*; D01H *15/00*; D02J *1/08*
U.S. Cl. 57—22 **36 Claims**

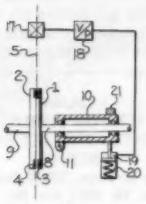


1. Thread splicing device, comprising a stationary base body having a first compressed-air canal formed therein, a splicing head being interchangeably connected to said base body, said splicing head having a second compressed-air canal formed therein being in communication with said first compressed-air canal formed in said base body and said splicing head having a splicing chamber formed therein being in communication with said second compressed-air canal formed in said splicing head, said splicing chamber including a selectively coverable longitudinal slot having a slot bottom and being operable for inserting and joining threads, said slot having a substantially circular cross section, at least in the vicinity of said bottom thereof, forming a partly full circle leaving an open aperture for inserting and removing the threads, and said longitudinal slot having two end sections of relatively larger cross section and a middle section of relatively smaller cross section.

4,424,664
FRICTION FALSE TWIST APPARATUS

Karl Bauer; Heinz Schippers, and Peter Dammann, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 272,936, Jun. 12, 1981, which is a continuation-in-part of Ser. No. 168,734, Jul. 14, 1980, Pat. No. 4,339,915. This application Mar. 22, 1982, Ser. No. 360,371
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928522; Jun. 26, 1980, 3023887; Jun. 15, 1981, 3123671; Nov. 17, 1981, 3145513
Int. Cl.³ D02G 1/08; D01H 7/92
U.S. Cl. 57—338 14 Claims



1. A yarn false twisting apparatus comprising

a pair of twist imparting members, with each member being mounted on a supporting shaft and including a yarn engaging friction surface, and at least one of said members comprising a readily flexible circular disc,

means rotatably mounting said twist imparting members such that portions of the respective yarn engaging friction surfaces are disposed in opposing, face to face relationship and define a twisting zone therebetween, and with at least that portion of said flexible disc which includes said friction surface being resiliently deflected from its normal plane of rotation at said twisting zone by its engagement with the friction surface of the other member or a yarn passing therebetween, said mounting means including a bearing housing rotatably mounting each of the supporting shafts, means mounting at least one of said housings for movement in a direction wherein said friction surfaces may be moved toward and away from each other at said twisting zone, and stop means positioned for limiting said movement so as to limit the extent of the resilient deflection of said flexible disc, and

drive means for operatively rotating each of said twist imparting members about their respective axes,

whereby a yarn may be continuously advanced through said twisting zone while having twist imparted thereto by frictional contact between the yarn and the respective opposed friction surfaces.

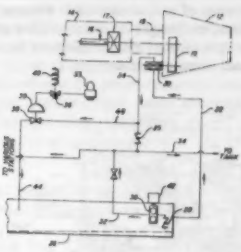
4,424,665
LUBRICATING SYSTEM FOR A TURBOMACHINE INCLUDING A METHOD OF OPERATING SAME

Neil A. Guest, Jeannette, and James F. Krisner, Latrobe, both of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Division of Ser. No. 80,641, Oct. 1, 1979. This application Jul. 2, 1981, Ser. No. 280,169
Int. Cl.³ F02C 7/06; F01M 1/02
U.S. Cl. 60—39.02 2 Claims

1. A method of operating a lubricating oil system for a turbomachine having a primary lubricating oil pump operatively connected to the rotor of the turbomachine and an independently driven standby lubricating oil pump comprising the steps of:

sensing that the standby oil pump is activated for delivering lubricating oil from an oil reservoir to a turbomachine; and

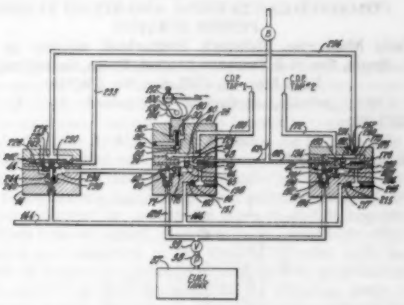


delivering at least a portion of the oil discharged from the primary oil pump to the oil reservoir in response to the sensed operation of the standby oil pump.

4,424,666
FUEL CONTROL SYSTEM AND APPARATUS FOR GAS TURBINE ENGINE

John C. Woody, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 26, 1980, Ser. No. 191,093
Int. Cl.³ F02C 9/28
U.S. Cl. 60—39.141 18 Claims



1. Apparatus for controlling flow of liquid fuel to a turbine engine comprising a body construction, a diaphragm-actuated fuel control valve means in said body construction responsive to the difference between the engine compressor discharge pressure and the burner reference pressure for controlling fuel flow to the engine, and relatively movable means for varying the effective compressor discharge pressure on the diaphragm-actuated valve means for regulating fuel flow to the engine to control the speed of the engine.

4,424,667
APPARATUS FOR INCREASING THE EFFICIENCY OF A GAS TURBINE ENGINE

Arthur E. Fanning, 7855 Bigger Rd., Centerville, Ohio 45459

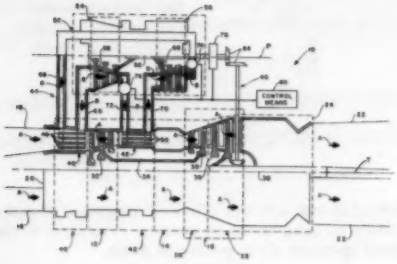
Filed Jun. 7, 1982, Ser. No. 386,156
Int. Cl.³ F02C 7/08, 7/143
U.S. Cl. 60—39.181 5 Claims

1. In a gas turbine engine including, in serial relationship, a compressor section, a combustor section and a turbine section, with said turbine section having an output shaft and all of said sections together defining a flow path, initially, for air and, later, for products of combustion through said engine, appara-

tus for improving the operating efficiency of said engine, comprising:

(a) a first heat exchanger disposed within said flow path of said engine upstream of said compressor section;

(b) a second heat exchanger disposed within said flow path of said engine upstream of said combustor section and downstream of said compressor section;



(c) pumping means interconnecting said first and second heat exchangers so as to cause cooling of air in said flow path at said first heat exchanger and heating of air in said flow path at said second heat exchanger; and

(d) means for coupling said output shaft of said turbine section with said pumping means so as to drive the latter with said output shaft.

4,424,668

COMBINED GAS TURBINE AND STEAM TURBINE POWER STATION

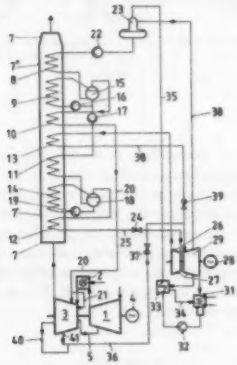
Dilip Mukherjee, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 10, 1982, Ser. No. 356,728

Claims priority, application Switzerland, Apr. 3, 1981, 2271/81

Int. Cl.³ F02C *6/18*

U.S. Cl. 60—39.182 **6 Claims**



1. Combined gas turbine and steam turbine power station with steam-cooled gas turbine components, in which power station the cooling steam is generated outside the gas turbine (1, 2, 3), in a waste heat boiler (7), and wherein the following features are combined:

(a) the waste heat from the gas turbine is utilized in a two-pressure waste heat boiler (7), which comprises a low-pressure section (7") and a high-pressure section (7');

(b) the steam which is generated in the low-pressure evaporator (9) of the waste heat boiler (7), is slightly superheated in a cooling-steam superheater (10), which is located, on the exhaust gas side, between the intermediate superheater (13) and the low-pressure evaporator (9);

(c) this cooling steam is forcibly led, on the one hand, in the gas turbine casing and hollow inlet vanes (43) and, on the other hand and separated therefrom, in the rotor (49) and hollow rotor blades (42), this steam cooling the components through which it flows, and being strongly superheated on being bled off;

(d) the steam, which is partially expanded in the high-pressure section (26) of the steam turbine (27), is heated up, in the waste heat boiler (7), in an intermediate superheater (13) which is located, on the exhaust gas side, between the high-pressure preheater (11) and the cooling steam superheater (10), and is led, together with the steam which has been bled from the gas turbine (3), into the correspondingly enlarged low-pressure section of the steam turbine (27) in order to be further expanded.

4,424,669

SAFETY DEVICE FOR THRUST REVERSER ASSOCIATED WITH THE JET ENGINE OF AN AIRCRAFT

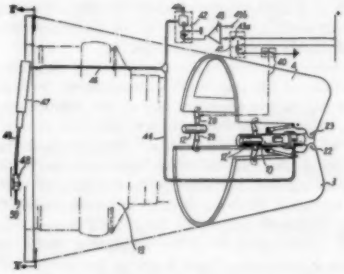
Etienne Fage, 16 Parc de Dane, 78350 Jouy-en-Josas, France

Filed Jan. 18, 1982, Ser. No. 340,344

Claims priority, application France, Feb. 24, 1981, 81 03637

Int. Cl.³ F02K *1/32*

U.S. Cl. 60—230 **7 Claims**



1. Safety device for automatically reducing the r.p.m. of the jet engine of an aircraft provided with a thrust reverser, in the event of untimely operation of said reverser, said thrust reverser comprising at least one obstacle for deflecting the jet, actuated by a mechanism to occupy either a retracted position or an opened out position, and controlled means for locking said obstacle in the retracted position, wherein said safety device comprises means for detecting the position of at least one mobile member of said locking means and for controlling throttling down means when said member tends to move away from its locking position without any order to open out having been given by the pilot of the aircraft.

4,424,670

DEVICE FOR PILOTING THE PROPULSION SYSTEM OF A SOLID PROPELLANT ROCKET

Max J. Calabro, Suresnes, Hauts-de-Seine, France

Filed Feb. 25, 1980, Ser. No. 124,349

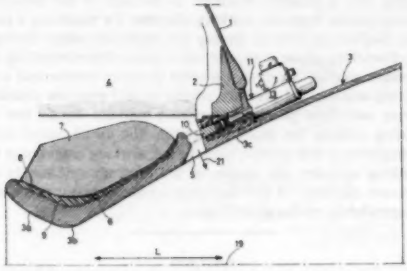
Claims priority, application France, Feb. 27, 1979, 79 04987

Int. Cl.³ F02K *9/12, 9/82*

U.S. Cl. 60—231 **12 Claims**

1. An improved propulsion system for a missile, the system being of the type having a solid propellant which produces hot and erosive propellant gases, and a nozzle for the piloting of the missile responsive to the passage of the propellant gases into the nozzle, the nozzle having a bore extended therethrough which includes a concentrator, a diffuser and a throat connected between the concentrator and the diffuser, the

improvement wherein the nozzle comprises a forepart composed of the concentrator, the throat and a length of the diffuser integrated within the propulsion system with the solid propellant surrounded about a portion of the forepart; the forepart having a plurality of ports extended through the wall of the nozzle from the outer surface of the nozzle to the bore for the direct passage of the propellant gases from the solid propellant to the bore; means, mounted on the outer surface of



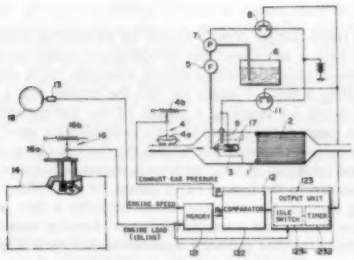
the nozzle within the propulsion system, for obturating the ports; an auxiliary powder block combustible to emit gases which are cooler and less corrosive than the propellant gases, said auxiliary powder block having the shape of a ring and being integrally molded around a portion of the forepart proximate the ports and the obturating means; and further comprising an insulating sleeve and a layer of flame inhibitor interposed intermediate the auxiliary power block and the nozzle.

4,424,671

EXHAUST GAS PARTICLE BURNING METHOD AND APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Naomi Tokura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 19, 1982, Ser. No. 350,393
Claims priority, application Japan, Feb. 20, 1981, 56-22107
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—274 **12 Claims**



1. A method of burning away exhaust particles emitted by an internal combustion engine and collected on a filter by using a burner with a glow plug, which comprises the following steps of:

(a) detecting exhaust gas pressure on the upstream side of the filter;

(b) detecting at least one engine operating condition;

(c) detecting engine idling;

(d) storing various reference exhaust gas pressure limit values allocated according to the detected engine operating conditions;

(e) comparing the detected exhaust gas pressure with the stored reference exhaust gas pressure limit value;

(f) measuring a predetermined time period after engine idling condition has been detected; and

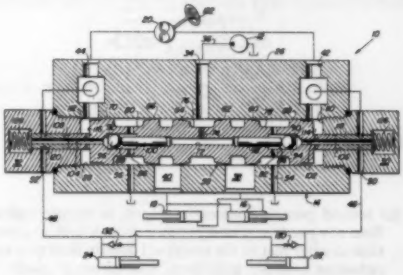
(g) outputting a signal to supply fuel to the burner and to actuate the glow plug for the predetermined period of time after engine idling condition has been detected and the detected exhaust gas pressure has exceeded the stored reference gas pressure limit value according to the detected engine operating conditions.

4,424,672

HYDRAULIC POWER STEERING SYSTEM

George P. Kalhora, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 7, 1982, Ser. No. 385,368
Int. Cl.³ F15B *9/10*
U.S. Cl. 60—385 **6 Claims**



1. In a hydraulic power steering system including a source of power steering fluid, a double-acting steering cylinder, a steering control valve connected to the source and steering cylinder and having a spool element normally located in a neutral position blocking the flow of fluid to and from the steering cylinder, a hand-operated metering pump coupled across the spool element by control circuitry and operable in opposite directions to respectively impose oppositely acting input signals on the spool element for causing the latter to shift in opposite directions from its neutral position so as to respectively effect extension and retraction of the steering cylinder, with the amount of extension or retraction being directly proportional to the amount of fluid displaced by the metering pump, a follow-up cylinder connected across said valve element by follow-up circuitry for producing a follow-up signal, in response to operation of the steering cylinder, which acts in opposition to an input signal then acting on the valve element, the improvement comprising:

blocking means operatively associated with the valve element and the follow-up circuitry and responsive to the movement of the valve element for interrupting fluid communication between the follow-up cylinder and the valve element only when the latter shifts to opposite extreme positions for effecting sharp turns.

4,424,673

HYDRAULIC SUPPLY SYSTEM OF A PULSATORY PRESS

Zbigniew Polanski, and Ryszard Moszumanski, both of Cracow, Poland, assignors to Politechnika Krakowska, Cracow, Poland

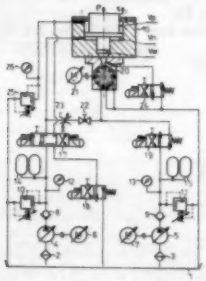
Filed Dec. 22, 1980, Ser. No. 218,804
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—486 **2 Claims**

1. A hydraulic operating system for a pulsatory press comprising:

(a) a servo motor with a piston having two interconnected

parts, one piston part being of larger diameter and having a working stroke pressure chamber thereunder and a return stroke pressure chamber thereabove, and the other piston part being of smaller diameter and having a pulsating pressure chamber thereunder;

(b) first pumping means arranged to supply hydraulic fluid at a predetermined pressure from a tank to a first slide divider that in a position I admits fluid to the working stroke pressure chamber for a working stroke of the piston and in a position II admits fluid to a return stroke pressure chamber for a return stroke, a run-off line being provided to exhaust fluid from chamber during the piston working stroke; and



(c) second pumping means arranged to supply hydraulic fluid at a predetermined pressure from a tank to a second slide divider that in the position I admits fluid to a rotary pulsating pressure generator, wherefrom it passes in a pulsating stream to the pulsating pressure chamber under the smaller diameter piston part during the working stroke of the piston, a run-off line being provided to exhaust fluid from the pulsating pressure chamber during the piston return stroke;

whereby when the first and second slide dividers are in position I the two part piston during its working stroke is subjected to the sum of the predetermined pressure in the working stroke chamber generated by first pumping means and the predetermined pulsating pressure in the pulsating stroke chamber generated by second pumping means.

4,424,674

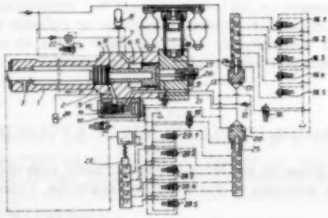
DIE CASTING MACHINE

Roland Geier, Viale Europa 72A, and Gerhard Zaiss, Via Ambra d'Oro 13, both of I25100 Brescia, Italy

Continuation-in-part of Ser. No. 820,808, Aug. 1, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 167,935

Int. Cl.³ B60T *17/22*

U.S. Cl. 60—534 **10 Claims**



1. A pressure die-casting machine comprising: a working cylinder, a working piston displaceable in the working cylinder, a multiplier cylinder connected to the working cylinder, a multiplier piston displaceable in the multiplier cylinder, a working chamber disposed between the working and multiplier pistons, a pressure medium supply line connected to the working chamber for driving the working piston during each of a first and a second working phase, a first pressure source and means for connecting said first pressure source to said supply line in said first working phase, a second pressure source and first valve means for controlling the pressure medium from said second pressure source and connecting said second pressure source to said medium supply line during said second phase; a check valve disposed in the pressure medium supply line, a pressure chamber on the side of the multiplier piston remote from the working chamber for receiving a pressure medium capable of driving the multiplier piston during a third working phase, a second valve means for controlling the pressure medium from said second pressure source and connecting said second pressure source to said pressure chamber during said third phase, the pressure medium supply line extending outside the multiplier piston, the check valve being arranged on a wall portion close to the working chamber of the working cylinder, the supply of the pressure medium to the pressure chamber of the multiplier cylinder being actuatable independently of the check valve.

4,424,675

TURBOCHARGER CONTROL SYSTEM FOR USE IN INTERNAL COMBUSTION ENGINES

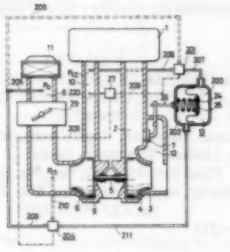
Kazuo Ojima, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,864

Claims priority, application Japan, Jul. 4, 1980, 55-90607

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **16 Claims**



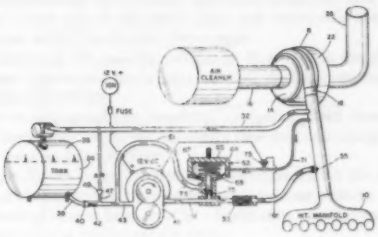
1. A turbocharger control system for an internal combustion engine having an exhaust gas turbocharger means including a compressor means, a turbine means, a throttle valve means for controlling a flow of intake air into the engine, and a bypass valve means for enabling a bypass of the turbine means by exhaust gases of the engine thereby controlling a speed of the turbine means, characterized in that the throttle valve means is disposed upstream of the compressor means, a pressure means is connected to the bypass valve means for controlling a positioning thereof, the pressure means includes a first pressure chamber means and a second pressure chamber means separated from the first pressure chamber means by a diaphragm means, means are provided for supplying the first pressure chamber means with a turbocharging pressure existing between the compressor means and an intake manifold of the engine and for supplying the second pressure chamber means with atmospheric pressure, means are provided for detecting the turbocharging pressure and comparing the detected pressure with a preset value, and in that control means are provided for applying the atmospheric pressure to the first pressure chamber means and applying a pressure existing between the throttle valve means and the compressor means to the second pressure chamber means in dependence upon an output signal from the detecting means when the turbocharging pressure is less than the preset value.

4,424,676

SUPPLEMENTARY FUEL INJECTION SYSTEM FOR A TURBOCHARGED INTERNAL COMBUSTION ENGINE

Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Continuation-in-part of Ser. No. 75,527, Sep. 12, 1979, abandoned. This application Oct. 22, 1981, Ser. No. 313,646
Int. Cl.³ F02B *37/00*; F02D *19/12*
U.S. Cl. 60—605 7 Claims



1. An improved multifuel turbocharger system for an engine of the type having an intake manifold for receipt of diesel fuel and air, said system comprising, in combination:

a turbocharger having an inlet for air, a compressor for compressing said air and an outlet to the diesel engine intake manifold;

an exhaust line from the engine connected to the turbocharger for driving the turbocharger;

an enclosed auxiliary fuel tank containing an auxiliary fuel mixture of alcohol and water;

a fluid pressure line connecting the turbocharger outlet to the auxiliary fuel tank for pressurizing the tank at the same pressure as the turbocharger outlet pressure;

an auxiliary fuel tank outlet line from the auxiliary fuel tank to the intake manifold; and

pressure control means solely in the auxiliary fuel tank outlet line including means to prevent flow of the auxiliary fuel mixture to the intake manifold below a threshold pressure, and for operating the engine solely on diesel fuel and air combustion at low engine load; said pressure control means also including means for operating the engine on diesel fuel, air and a proportionally increasing auxiliary fuel mixture at increasing engine loads above said threshold pressure including restrictor means sized to permit auxiliary fuel flow directly proportionally responsive to the pressure of said turbocharger outlet to the auxiliary fuel tank to provide increased auxiliary fuel flow directly and proportionally in response to increased engine load above the threshold pressure level, air inlet means to the auxiliary fuel tank outlet line downstream from the restrictor means and a mechanical, auxiliary fuel and air pump downstream from the restrictor means for pumping the auxiliary fuel and air mixture into the intake manifold.

4,424,677

RANKINE CYCLE SYSTEM EMPLOYING SEASONAL TEMPERATURE VARIATIONS

William Lukasavage, P.O. Box 340, Great Meadow, N.J. 07838

Division of Ser. No. 61,629, Jul. 27, 1979, Pat. No. 4,347,703.
This application Dec. 24, 1981, Ser. No. 334,172
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—660 2 Claims

1. A turbine and control valve comprising:

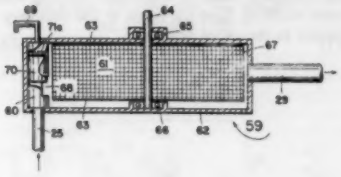
(a) a casing;

(b) a shaft rotatably supported in said casing;

(c) a pair of spaced circular plates centrally mounted on said shaft;

(d) a plurality of concentric layers of a mesh material extending between said plates;

(e) a cylindrical container having a vapor inlet, an atmospheric vent and an elongated slot aligned to admit vapor against said mesh material; and



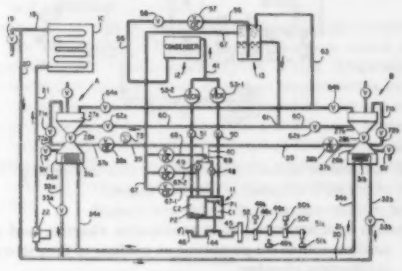
(f) a piston slidably movable within said container to control the opening of said slot; said piston being capable of movement in response to a difference in pressure between said inlet and said vent thereby exposing more or less of said slot.

4,424,678

HEAT POWERED APPARATUS

Terrel A. Kizziah, Rte. 1, Box 71, Vance, Ala. 35490

Filed Sep. 28, 1981, Ser. No. 306,178
Int. Cl.³ F01K *27/00*
U.S. Cl. 60—670 8 Claims



1. Heat powered vapor generating apparatus, comprising:

first and second working fluid units receiving a quantity of a vaporizable working fluid;

each of said units comprising a vapor generator selectably receiving heat to vaporize liquified working fluid in the vapor generator, and a fluid recovery vessel in elevated relation to said vapor generator;

fluid lines connected to said vapor generators and conducting vaporized working fluid at a high pressure to a utilization means which expands the vapor and thereafter exhausts the expanded vapor at a relatively lower pressure;

condensing means operative to receive and condense said exhaust vapor;

working fluid return means operatively associated with said condensing means and with both of said recovery vessels and operative to return condensed working fluid to a selected recovery vessel;

each of said working fluid units further comprising a fluid line in communication with liquid working fluid collected in the recovery vessel and extending to the vapor generator, and a fluid recovery valve selectably opening said fluid line to allow said liquid working fluid collected in the elevated recovery vessel to drain into the vapor generator; and

each of said working fluid units further comprising a pressure equalizing line in communication between the vapor generator and the recovery vessel above the level of collected liquid therein, and an equalizing valve selectably

operative to open said equalizing line when said fluid recovery valve is open,

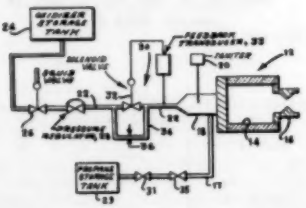
so as to equalize vapor pressure between vapor generator and recovery vessel of a selected working fluid unit as liquid working fluid collected in the recovery vessel is drained to the vapor generator.

4,424,679

CONSTANT THRUST HYBRID ROCKET MOTOR

Allen L. Holzman, Cupertino, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1981, Ser. No. 300,766
Int. Cl.³ F02K 9/56
U.S. Cl. 60—251 2 Claims



1. A constant thrust hybrid rocket motor comprising:

a combustion chamber at one end thereof;

an oxidizer source at the other end thereof;

means interconnecting said combustion chamber and said oxidizer source for permitting an oxidizer to flow into said combustion chamber;

means operably connected to said flow permitting means for controlling the flow of said oxidizer therethrough, said flow controlling means including means for allowing a constant flow therethrough and means for allowing a variable flow therethrough, said constant flow control means being in the form of a by-pass line circumventing said variable flow control means, said by-pass line having a fixed diameter orifice of predetermined size, said variable flow control means being in the form of a solenoid valve having an opening which is operable from a closed position to an open position of predetermined size, said predetermined size of said fixed diameter orifice being of substantially such size as to yield required oxidizer flow to said combustion chamber at highest density oxidizer conditions and said predetermined size of said open position of said opening of said solenoid valve in combination with said predetermined size of said fixed orifice being of substantially such size as to yield required oxidizer flow to said combustion chamber at lowest density oxidizer conditions; and

means operably connected to said flow permitting means for monitoring said flow therethrough and providing a signal indicative thereof to said flow controlling means for regulating said variable flow control means;

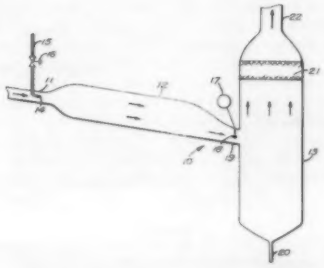
whereby appropriate regulation of said variable flow control means in combination with said constant flow control means enables operation of said hybrid rocket motor to take place over a wide temperature range and without experiencing wide pressure variations.

4,424,680

INEXPENSIVE METHOD OF RECOVERING CONDENSABLE VAPORS WITH A LIQUIFIED INERT GAS

Ronald D. Rothchild, 106 Rynda Rd., South Orange, N.J. 07079

Filed Nov. 9, 1981, Ser. No. 319,329
Int. Cl.³ F17C 11/00
U.S. Cl. 62—48 11 Claims



1. A method for recovering as liquid a condensable vapor comprising the steps of:

a. introducing the liquid phase of an inert gas to a gas stream containing said condensable vapor;

b. intermixing said gas stream and said liquified inert gas so that said liquified inert gas is vaporized and said gas stream becomes homogeneous in temperature, with the attendant condensation of said condensable vapor; and,

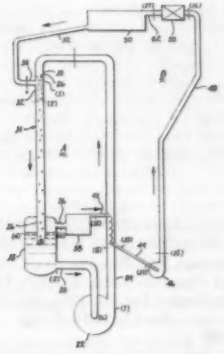
c. separating said condensed condensable vapor from said gas stream and vaporized inert gas.

4,424,681

HYDRAULIC REFRIGERATION SYSTEM AND METHOD

Warren Rice, Tempe, and Craig Hosterman, Scottsdale, both of Ariz., assignors to Natural Energy Systems, Tempe, Ariz.

Filed Jun. 14, 1982, Ser. No. 388,227
Int. Cl.³ F25B 1/00, 1/06
U.S. Cl. 62—114 22 Claims



1. A two stage method for compressing and withdrawing heat from a refrigerant fluid within a refrigeration system having an evaporator and an expansion valve, said method comprising the steps of:

(a) establishing a downward flow of a fluid non-miscible with the refrigerant fluid within a down pipe and establishing a

downward flow of a further fluid non-miscible with the refrigerant fluid within a further down pipe;

(b) conveying the refrigerant fluid in a gaseous state from the evaporator to the upper end of the down pipe;

(c) entraining the gaseous refrigerant fluid within the downward flow of a non-miscible fluid to compress the refrigerant fluid without altering its state;

(d) separating the gaseous refrigerant fluid from the non-miscible fluid at the lower end of the down pipe;

(e) withdrawing the separated gaseous refrigerant fluid from the lower end of the down pipe and conveying it to the upper end of the further down pipe;

(f) entraining the gaseous refrigerant fluid within the downward flow of the further non-miscible fluid to compress the refrigerant fluid;

(g) withdrawing the separated refrigerant fluid from the lower end of the further down pipe and conveying it to the expansion valve;

(h) converting the refrigerant fluid withdrawn from the lower end of the further down pipe from a gaseous state by withdrawing heat to convert it to a liquid state prior to conveyance of it to the expansion valve;

(i) maintaining the refrigerant fluid in a liquid state during said step of conveying; and

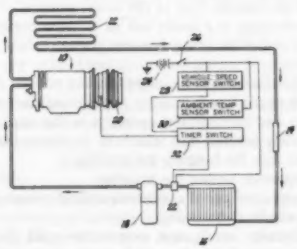
(j) dissipating heat from the non-miscible fluid and from the further non-miscible fluid.

4,424,682

VEHICLE AIR CONDITIONING COMPRESSOR CONTROL SYSTEM

Fred S. Miska, Ortonville, and James A. Duddles, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1982, Ser. No. 348,912
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—133 **3 Claims**



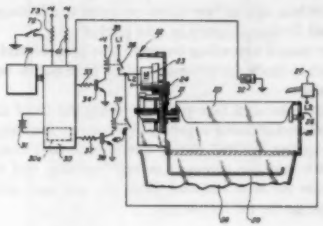
1. In combination with a vehicle air conditioning compressor control system that normally cycles an engine actuated refrigerant compressor on and off according to cooling demand, a timed cycling override control comprising timer means, vehicle speed sensing means and temperature sensing means for cooperating to maintain the compressor continuously on while the engine is running and during otherwise normal on-off cycling use for a time period predetermined by the cooperation of a preselected time period on the timer means when the vehicle speed sensed falls below a predetermined speed and the temperature sensed remains above a predetermined temperature whereby the compressor is then prevented from cycling off and on regardless of cooling demand.

4,424,683

ICE MAKER CONTROL

Larry J. Manson, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 27, 1982, Ser. No. 424,491
Int. Cl.³ F25C *1/00*
U.S. Cl. 62—135 **17 Claims**



1. In a refrigeration apparatus having means defining a below-freezing compartment, an ice maker located within said compartment, and ice harvesting means for selectively harvesting ice from said ice maker, an improved ice maker control comprising:

sensing means for sensing the temperature to which water in said ice maker is exposed;

means for calculating and storing a number which represents the cumulative sum of individual numbers which are periodically determined based on a first temperature-dependent function when said sensed temperature is above a predetermined temperature and based on a second temperature-dependent function when said sensed temperature is at or below said predetermined temperature; and,

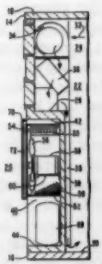
means for initiating operation of said ice harvesting means when said stored number reaches a predetermined number.

4,424,684

CONDENSER SECTION FOR CONTAINER REFRIGERATION UNIT

William L. Waldschmidt, Farmington, and Donald D. King, Chanhassen, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 5, 1982, Ser. No. 337,060
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **4 Claims**



1. A relatively large transport refrigeration unit of the type and size used on large container units typically carried by ship and rail including:

a lower condenser section and an upper evaporator section thermally insulated from each;

said condenser section being defined by a rear wall, top and

bottom walls, and opposite side walls together forming a forwardly open pocket;

a U-shaped refrigerant condenser coil in said pocket in inverted disposition and located in the upper central portion of said pocket so that an upwardly open, U-shaped space in said pocket is defined to the sides and bottom of said coil, a number of refrigeration system components including at least an electric-motor-compressor, an electric control box, and an operations recorder in a U-shaped array in said U-shaped space in said pocket;

plate means extending between the ends of said condenser coil to block the admission of air from below between said ends;

a condenser coil face plate covering the front edge of said coil and defining a generally centered fan ring opening;

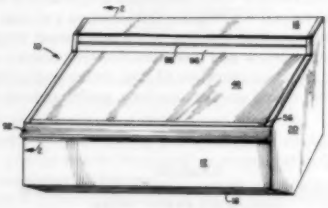
a propeller fan and motor mounted in said condenser coil with said fan disposed in said opening and operable to draw air into said coil from the top and sides and discharge the air forwardly.

4,424,685

AUTOMATED ENERGY CONSERVING COVER FOR REFRIGERATED CABINET ACCESS OPENINGS

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Apr. 24, 1981, Ser. No. 256,996
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—249 **24 Claims**



1. In a refrigerated display cabinet having outer walls defining a product storage and display space containing refrigerated air and having an access opening in at least one wall thereof to provide for product access; the imrovement comprising:

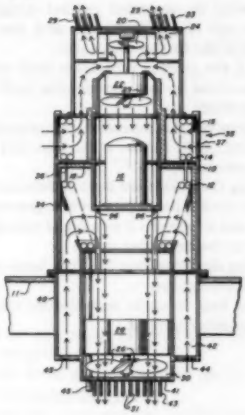
an energy conserving assembly including a flexible barrier cover arranged for covering at least a portion of said access opening and adapted for storage away from said access opening, a support means for providing structural support for and enabling movement of said flexible barrier cover from the storage position across at least a portion of said access opening and having at least two rails for supporting said flexible barrier cover, motive means for powering the movement of said flexible barrier cover, control means for actuating said motive means in response to the occurrence of selected operational conditions to enable movement of said barrier cover across said access opening whereby contact of ambient air with the refrigerated air contained within said product storage and display space is substantially limited, and traction means arranged for movement relative to at least one of said rails and wherein said traction means are connected to said motive means for enabling said traction means to be powered during times determined by said control means, and wherein said flexible barrier cover is connected to said traction means and is withdrawn from stored position by power derived from said motive means.

4,424,686

FLOOR MOUNTED AIR CONDITIONER

James M. Lapeyre, New Orleans, La.; Noel A. Svendsen, Marblehead, Mass.; Richard S. Lindberg, Shrewsbury, Mass., and Raymond J. Carroll, Jr., Billerica, Mass., assignors to The Laitram Corporation, New Orleans, La.

Filed Mar. 9, 1981, Ser. No. 241,947
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—259.1 **10 Claims**



1. A floor mounted air conditioner comprising:

a housing having a lower portion and an upper portion, the lower portion of the housing including a wall insertable into a mounting opening in the floor of a room to be cooled, the upper portion of the housing being disposable above the floor and having a cold air exhaust duct upwardly extending from the upper portion and terminating in an upper cold air exhaust port;

a peripheral inlet at the top of the upper portion of said housing for drawing air from the room into the housing for cooling, said inlet surrounding and being spaced from said upper cold air exhaust port;

a hot air exhaust duct in the lower portion of said housing terminating in a lower hot air exhaust portion at the bottom end of the lower housing portion below the mounting floor;

a peripheral duct in the lower housing portion defined by the wall of the lower housing portion and the hot air exhaust duct and having inlet openings in the wall of the lower housing portion into which air is drawn from below the floor into the housing for cooling;

a compressor within the housing;

conically configured condenser coils disposed about a vertical axis in the housing;

cylindrically configured evaporator coils disposed about said vertical axis in said housing above said condenser coils;

a drip pan in said housing separating said condenser and evaporator coils and including one or more openings arranged to discharge condensate onto said condenser coils;

a condenser fan in said hot air exhaust duct for blowing hot air from said housing out of said lower hot air exhaust port into the space below the floor;

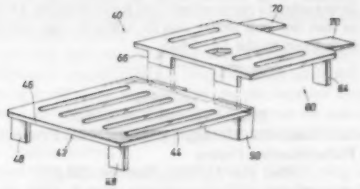
an evaporator fan disposed in the upper cold air exhaust duct for blowing cool air out of said upper cold air exhaust port into the room; and

a compressor cooling fan for blowing cooled air from said cold air exhaust duct past said compressor and toward said hot air exhaust duct.

4,424,687
ICE RACK FOR USE IN PORTABLE ICE CHEST

Marshall M. Morgan, 8210 Brae Acres, Houston, Tex. 77074

Filed Jan. 18, 1982, Ser. No. 340,100
Int. Cl.³ F25D 3/08
U.S. Cl. 62—457 9 Claims



1. A rack adapted to be used within a portable ice chest which comprises:

(a) a first rack portion having:

(1) a generally planar portion adapted to support food stuffs placed thereon;

(2) leg means extending downwardly from said planar portion for supporting said planar portion within an ice chest;

(3) additional leg means having hollow receptacles therein which leg means additionally supports said planar portion within the ice chest;

(4) wherein said receptacles within said additional legs comprise a joinder means;

(b) a second rack portion having:

(1) a generally planar portion adapted to be optionally coextensive with the planar portion of said first rack portion;

(2) downwardly extending legs adapted to support said second rack portion parallel to and coplanar with said first rack portion;

(3) tab means coacting with said receptacles in the legs of said first rack portion to secure said first and second rack portions in a planar arrangement within an ice chest;

(4) second tab means for alternately securing said second rack portion at an angle with respect to said first rack portion coacting with said receptacles in said legs.

4,424,688
POWER UNIT FOR ABSORPTION HEAT EXCHANGE SYSTEM

William H. Wilkinson, Upper Arlington, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Jul. 12, 1982, Ser. No. 397,620
Int. Cl.³ F25B 15/00
U.S. Cl. 62—476 12 Claims

1. A power unit for an absorption heat exchange system comprising a plurality of substantially coxially positioned pipes of progressively larger diameters and of sizes that provide a space between the inner and outer walls of the adjacent pipes and including:

a. a hollow vertically oriented central pipe;

b. an upper and a lower closure member extending outwardly from the center pipe and connected to the outer pipes to form substantially annular chambers, contigous one to the next, surrounding the center pipe;

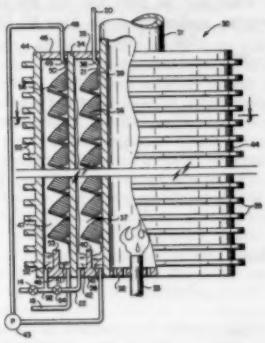
c. means to provide heat in the central pipe;

d. means for providing a cooling fluid to contact the outer surface of the largest diameter pipe;

e. means for discharging a refrigerant-absorbent solution upon the inner walls of the substantially annular chambers to desorb refrigerant from solution with the absorbant and to condense the refrigerant on the outer walls of the chambers;

f. means for collecting the refrigerant and solution separately in the substantially annular chambers;

g. means for conveying the separately collected solution



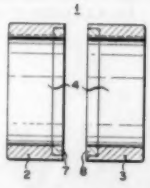
from one chamber to the next contiguous progressively larger chamber and away from the largest chamber; and

h. means for conveying the separately located refrigerant from the chambers.

4,424,689
FINGER RING

Takashi Saito, Funabashi, Japan, assignor to Takashi Saito/Iwasaki Denko Company, Ltd., Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 297,020
Claims priority, application Japan, Sep. 1, 1980, 55-123126[U]
Int. Cl.³ A44C 9/02
U.S. Cl. 63—15.1 7 Claims



1. A finger ring which comprises:

a first ring member which has a non-circular hole being composed of a central inscribed circular main hole region whose diameter is substantially equal to the smaller diameter of the joint of the finger to be inserted into the ring member, and at least one supplementary hole region extending from said central circular main hole region;

a second, separate ring member which has a non-circular hole into which the finger can be inserted, said hole being composed of a central inscribed circular main hole region whose diameter is substantially equal to the smaller diameter of the joint of the finger to be inserted into the ring member, and at least one supplementary hole region extending from said central circular main hole region;

said first and second ring members insertable on said finger independently and separately from one another; and

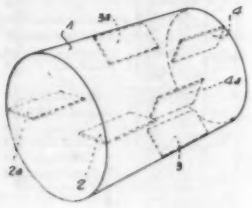
means for connecting the first and second ring members after they have been individually placed around the finger so that their relative movement along the finger lengthwise thereof is prevented, while permitting one of said ring members to be rotated relative to the other ring member through a prescribed angle.

4,424,690

DRUM APPARATUS FOR THE TREATMENT OF HIDES, LEATHERS AND THE LIKE

Francisco J. Gili Bas, Calle Lincoln, 44, Barcelona 6, Spain

Filed Apr. 10, 1981, Ser. No. 253,158
Claims priority, application Spain, May 13, 1980, 250.665
Int. Cl.³ A43B 13/12
U.S. Cl. 69—30 6 Claims



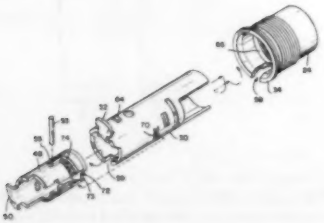
1. Drum apparatus for the treatment of hides, leathers and the like, comprising; a substantially cylindrical member having an inner interior defining surface, and a plurality of substantially radially extending paddles within said interior and fixed to the inner surface of said cylindrical member, said paddles having respective lengths substantially less than the length of said cylindrical member and being longitudinally separated with respect to each other, said paddles being situated in different diametric planes and such that no two paddles are axially aligned with each other, said paddles together extending over substantially the entire length of said cylindrical member.

4,424,691

PULL-RESISTANT CYLINDER LOCK

William R. Foshee, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Mar. 4, 1982, Ser. No. 354,815
Int. Cl.³ E05B 63/00
U.S. Cl. 70—224 11 Claims



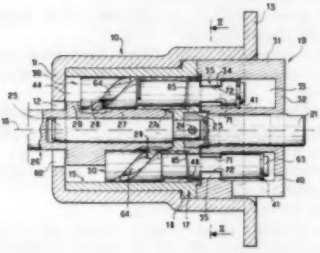
1. A cylinder lock, comprising
a chassis having a fixed cylindrical hub,
a knob sleeve rotatably mounted in the hub and having an out-turned rollback cam overlying the inner end of the hub for engagement therewith to transmit outward pull from the sleeve to the fixed hub,
a key-actuated cam sleeve or the like within the inner end of the knob sleeve and having an out-turned rollback cam at its inner end in position to overlie the inner end of the hub and to transmit outward pull from such cam sleeve to the hub,
outer means on the knob sleeve projecting radially outward therefrom within the length of the hub and defining an outward-facing shoulder,
said hub having hub means forming a circumferentially extending rearward-facing shoulder positioned for engagement by said outward-facing shoulder to receive outward force from the knob sleeve, said shoulders being constructed and arranged to permit rotation of the knob sleeve in the hub for actuating said rollback cam,
inner means on the knob sleeve projecting radially inward from its wall within the length of the cam sleeve and defining an inner outward-facing edge,
said cam sleeve having means forming an inward-facing edge positioned for engagement by said inner outward-facing edge to receive outward force from the knob sleeve so that the cam sleeve and its rollback cam will transmit such force to the fixed hub.

4,424,692

BRAMAH OR PIN LOCK

Raymond Rousseau, Montigny le Bretonneux, France, assignor to Fichet-Bauche, France

Filed Jul. 30, 1981, Ser. No. 288,295
Claims priority, application France, Aug. 5, 1980, 80 17305
Int. Cl.³ E05B 27/08
U.S. Cl. 70—363 22 Claims



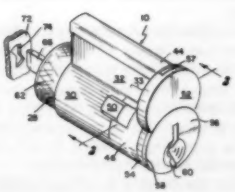
1. A lock comprising a stationary body, a cylinder rotatably mounted about its longitudinal axis in the body, a bolt operating member which is rotatably attached to the cylinder, pins movable by a key in housings formed in the cylinder and the body, the housings formed in the cylinder communicating with an axial key passage of the cylinder, wherein said pins are mechanically driven in translation by the key along their longitudinal axis and in rotation about said axis and are each a unitary member which is permanently engaged in a housing of the cylinder and in a housing of the body, the pin housings formed in the body being interconnected by an annular path in which pass the pins when the cylinder is rotating, said annular path being formed with projections or contractions adapted for cooperating with cut-outs in the pins.

4,424,693

KEY-REMOVABLE LOCK CORE

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Nov. 5, 1980, Ser. No. 204,290
Int. Cl.³ E05B 27/02
U.S. Cl. 70—369 4 Claims



1. A key-removable lock core for use in a receptacle defining a core-receiving opening having a first cylindrical portion for axially slidably receiving the key plug housing of a core and an

adjoining second portion for receiving the pin tumbler housing of such core, and having a side wall defining a rearward-facing shoulder spaced inward from the core-receiving end of such receptacle for engagement by a core-retaining lug on such core, comprising

a core body having a key plug housing defining a cylindrical chamber to receive an axial portion of a rotatable key plug, and having a pin tumbler housing containing an axial series of pin tumbler barrels,

said key plug housing extending over a length of the core sufficient to support the key plug coaxially therewith and having a cut-away portion, and the pin tumbler housing having an integral portion extending across the cut-away portion of the key plug housing and containing at least one pin tumbler barrel,

a control sleeve positioned coaxially with the key plug housing in said cut-away portion thereof and defining a cylindrical chamber in alignment with that of the key plug housing to receive a portion of the key plug, said control sleeve having a pin tumbler bore therein aligned with each barrel in the integral portion of the pin tumbler housing,

a key plug in said chambers, said integral portion of the pin tumbler housing having a side face spaced from said side wall of the core receptacle so as to define a clearance space between itself and such side wall for the reception of a retaining lug,

the interface between the key plug and its surrounding core body and control sleeve providing an operating shear line and the interface between the control sleeve and the extended portion of the pin tumbler housing forming a control shear line for the core,

a retaining lug on said control sleeve extending radially outward therefrom to a distance greater than the radius to the control shear line so as to stand outward from the cylinder defined by such control shear line, said retaining lug being movable by rotation of the control sleeve between a retracted position within said clearance space so as to clear said receptacle side wall and permit insertion of the core into the receptacle and a projected position for engagement behind the rearward-facing shoulder of said receptacle so as to retain the core therein,

said integral portion of the pin tumbler housing having on its other side a stop side face spaced from the other side of the core receptacle so as to define a second clearance space between itself and such other side wall, and a stop lug on said control sleeve movable within such second clearance space and against said stop side face for stopping the retaining lug in its projected position.

4,424,694

CONSTRUCTION OF CYLINDER LOCK

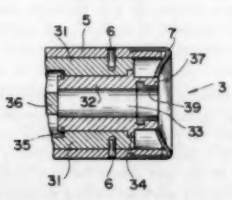
Haruo Mochida, Yokohama City, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Sep. 25, 1981, Ser. No. 305,781

Claims priority, application Japan, Sep. 26, 1980, 55-134807

Int. Cl.³ E05B *63/00*

U.S. Cl. 70—422 **6 Claims**



1. A cylinder lock comprising

a casing having a bore;

a cylinder rotatably received in said bore of said casing and having a keyhole;

a tumbler mechanism connected with both said casing and said cylinder, allowing said cylinder to rotate only when a correct key is inserted into said keyhole;

means actuated by rotational movement of said cylinder to cause locking action of the cylinder lock; and

a mouth member located within said cylinder at an entrance of said keyhole, said mouth member having an insertion hole enabling a key to be inserted therethrough into said keyhole, said mouth member including a collar section having a non-circular peripheral shape, being embedded to extend radially within the cylinder material to prevent said mouth member from being extracted or axially pulled from said cylinder when the mouth member is engaged by a tampering device, said mouth member having a hardness value greater than that of said cylinder, enabling the collar section to deform a surrounding portion of said cylinder in contact with the periphery of the collar section when engaged and twisted by said tampering device so that said mouth member rotates relative to said cylinder while remaining axially immovable, whereby said mouth member renders the tampering device substantially incapable of engaging walls of said cylinder defining the keyhole to prevent said device from forcing rotation and axial removal of said cylinder.

4,424,695

ARRANGEMENT FOR FABRICATING DOUBLE CONICAL SPRINGS

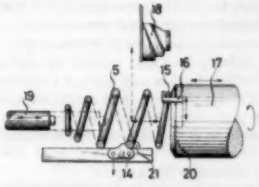
Ernst Kirchhoff, Hagen; Alfred Ränder, Iserlohn, and Günter Adolf, Hagen, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 205,950

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020958

Int. Cl.³ B21F *3/10, 35/02*

U.S. Cl. 72—128 **11 Claims**



1. A method for producing double conical springs having a largest winding diameter located between ends of the springs, comprising the steps of: heating wire-shaped material; winding said wire-shaped material on a mandrel having a cylindrical portion and a conical end, so that gaps of space are left between wound coils; removing said mandrel to leave a semi-finished spring having a cylindrically wound portion joined to a first conically wound end portion, said semi-finished spring having an interior profile corresponding substantially to the outer profile of said mandrel; clamping one end of said cylindrically wound portion to a roll-in unit; clamping and holding a coil of said semi-finished spring which is to remain cylindrical in the double conical spring when finished, the cylindrical portion of said semi-finished spring between said clamped one end and said cylindrical coil being formed to a second conically wound portion by said roll-in unit; inserting a shaping member radially into the interior space of said cylindrically wound portion by passing said shaping member through at least one gap between coils and moving said shaping member axially against said roll-in unit; holding said shaping member stationary against said roll-in unit; rotating said roll-in unit through a predetermined angle and moving said one end

clamped to said roll-in unit inwardly toward the interior of said cylindrically wound portion so that said cylindrically wound portion is wound onto said shaping member for deforming said cylindrically wound portion into said second conically wound portion, said cylindrical coil being located between said first conically wound portion and said second conically wound portion; and removing said shaping member from the interior of said second conically wound portion by passing said shaping member through at least one gap between coils to the exterior of the spring.

4,424,696

INDIRECT EXTRUSION PRESS

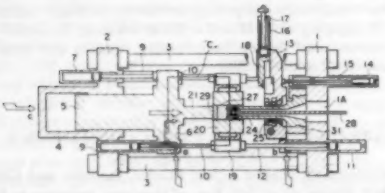
Akira Asari, Osaka; Tatsuhiko Noyori; Masakazu Ueda, both of Kobe, and Takahiko Ishii, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 26, 1981, Ser. No. 267,387

Claims priority, application Japan, May 24, 1980, 55-70444; May 26, 1980, 55-70506

Int. Cl.³ B21C *27/00, 35/06*

U.S. Cl. 72—273.5 **7 Claims**



1. An indirect extrusion press comprising:

a press frame body of a Rahmen structure which comprises a press platen and a main cylinder frame spacedly and oppositely disposed in the front and back positions, respectively;

a plurality of tie rods interconnecting said press platen and said main cylinder frame;

a die stem fixedly secured on said press platen along the longitudinal center line of the press and which comprises a die at one end thereof opposite said press platen;

a container adapted to retain a billet therein;

a main ram slidably movable relative to said main cylinder frame and which further comprises a crosshead at the front end thereof and a pressing stem extending toward said container from said crosshead, said container and pressing stem being movable so as to indirectly extrude said billet through said die;

a plurality of container holders;

a plurality of hydraulic cylinders for shifting said container and which are mounted on said platen; and

a plurality of hydraulic coupling cylinders secured to the crosshead, each of said container-shifting cylinders and coupling cylinders further comprising pistons slidably mounted therein and respectively interconnecting said container holders with said crosshead and said platen to thereby form a container unit, the relative position of said container and said pressing stem being fixed by said coupling cylinders during an extrusion stroke so that the container-shifting force is added to an extrusion force.

4,424,697

WHEEL MOUNTING SUSPENSION STRUT CAMBER CORRECTING TOOL

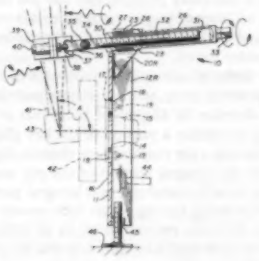
James L. Carver, 16324 Lauder La., Richardson, Tex. 75080

Filed Sep. 25, 1981, Ser. No. 305,576

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—309 **17 Claims**

1. In a wheel strut to wheel spindle camber correcting tool: a rigid body mountable to a wheel strut wheel mounting disk; mounting means for removably mounting said rigid body to the wheel mounting disk and wheel spindle; reversible direction drive means mounted to the top of said rigid body; pivotal mount means interconnecting said reversible direction drive means and said rigid body; power drive means drive connected to power said reversible direction drive means; and strut connection means on said reversible direction drive means with removable fastening means for connecting said tool to a wheel strut, and with said rigid body tightly mounted on said wheel mounting disk, when said reversible direction drive means is driven applying camber corrective bending forces to the wheel spindle to strut interconnect; wherein said reversible direction



drive means comprises a reversible direction screw drive assembly including a rotatably fixed drive screw hub housing member pivotally mounted on said rigid body and an elongate tool drive housing rotatable in said hub housing member carrying a nut adjacent one end of the body; and wherein said reversible direction drive means includes an elongate non-rotational bolt member threadably engaging threads of said nut to be driven by rotation of said drive housing and nut directionally in and out, dependent on the direction of rotation of the nut with the drive housing.

4,424,698

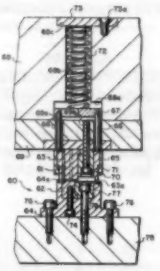
TOOL FOR COINING

Neal E. Langseder, Rolling Meadows, Ill., assignor to American Can Company, Greenwich, Conn.

Filed May 19, 1982, Ser. No. 379,863

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—354 **7 Claims**



1. A tool for coining a portion of a progressively formed part carried by its progression strip and connected thereto at one end by a flexible tie piece and the portion of the part to be coined having been lanced and bent sufficiently to be displaced from the plane of the part where the tool includes:

a coin punch with a working surface mounted to move along an axis of a station for performing the progressive punch and die operation of coining the part captured thereunder,

a coin anvil aligned along said axis to support a portion of

the part beneath said punch during coining in the progressive punch and die operation,

a resiliently biased member carried about said coin punch and extending beyond said working surface thereof to first contact another portion of said part in advance of contact by said working surface, and

a recess surface about said coin anvil shaped to receive said other portion of said part to support same in position during coining between said coin punch and coin anvil to assure that said portion to be coined is aligned relative to said axis.

4,424,699

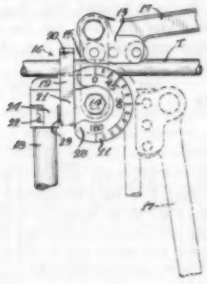
TUBE BENDER CONSTRUCTION

Henry J. Peppers, Rolling Meadows, Ill., assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Filed Feb. 17, 1981, Ser. No. 235,026

Int. Cl.³ B21D *11/04*

U.S. Cl. 72—388 **9 Claims**



1. In a tube bender having a mandrel defining a peripheral arcuate bending groove, and means swingable about the mandrel to urge a tube to be bent into said groove to effect an arcuate bend in the tube, the improvement comprising:

a tube retaining member having a mounting portion pivotally mounted in said tube bender, and a tube engaging portion adapted to engage the tube to be bent in a tube retaining disposition to prevent longitudinal movement of the tube during a tube bending operation, said tube engaging portion being movable from said tube retaining disposition to first and second retracted positions for facilitating placement of said tube to be bent in the tube bender prior to the bending operation, and removal thereof from the tube bender upon completion of the bending operation, a projection on said tube retaining member a stop shoulder on said mandrel adjacent said bending groove, said projection extending parallel to the axis of pivoting of the tube retainer member; and

means for resiliently urging said mounting portion of the tube retaining member to a disposition wherein said projection moving in an arcuate path about the pivot axis of the tube retaining member is intercepted by said stop shoulder as an incident of pivotal movement of the tube retaining member being swung to the first retracted position whereby retractive movement of said tube retaining member is yieldingly limited to said first retracted position, said resilient urging means permitting said projection to be urged past said stop shoulder away from said tube retaining disposition into an end of said bending groove in the second retracted position whereby pivotal movement is releasably constrained by the projection in said bending groove in the second retracted position.

4,424,700

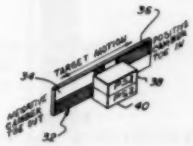
CALIBRATION FAULT DETECTOR AND AUTOMATIC CALIBRATOR

Lowell H. Erickson, and Marcellus S. Merrill, both of Denver, Colo., assignors to Merrill Engineering Laboratories, Inc., Englewood, Colo.

Division of Ser. No. 129,269, Mar. 10, 1980, abandoned. This application Aug. 30, 1982, Ser. No. 412,793

Int. Cl.³ G01B *21/26*

U.S. Cl. 73—1 E **13 Claims**



11. A calibration fault detecting and automatic calibrating apparatus for use in combination with a wheel aligner for detecting whether the apparatus is calibrated to correctly provide an output corresponding to either the toe angle or camber angle of a wheel being tested, the calibration fault detecting and automatic calibrating apparatus comprising:

first means for providing an indication whether the wheel aligner is at either a first predetermined toe angle or a first predetermined camber angle;

second means responsive to the movement of the wheel aligner for generating a first signal corresponding to either the toe angle or camber angle of the wheel being tested;

third means responsive to said first means for producing a control signal when the wheel aligner is at either the first predetermined toe angle or the first predetermined camber angle; and

fourth means responsive to the control signal for detecting whether the first signal corresponds to either the first predetermined toe angle or the first predetermined camber angle when the control signal is present to determine whether the automatic calibrating apparatus is correctly calibrated.

4,424,701

ULTRASONIC MEASURING SENSOR FOR THE FIXING STATION OF A NON-MECHANICAL PRINTING OR COPYING DEVICE

Eduard Mair, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,432

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3112003

Int. Cl.³ G01N *29/02*

U.S. Cl. 73—24 **3 Claims**

1. An ultrasonic measuring sensor for use in the fixing station of a non-mechanical printing or copying device for measuring the solvent vapor concentration therein comprising:

an electroacoustical transducer for transmitting an ultrasonic signal and for receiving said signal after reflection thereof;

a reflector disposed a distance from said ultrasonic transducer for reflecting ultrasonic signals therefrom back to said transducer, said transducer generating an electrical signal corresponding to the transmit time of said signal between said transducer and said reflector which varies according to the amount of solvent vapor present between said transducer and said reflector; and

a fine mesh net enclosing the volume between said transducer and said reflector, said net having a mesh size which

is significantly smaller than the wavelength of said ultrasonic signal for substantially preventing brief localized

disruptions in said solvent vapor concentration from penetrating said mesh and falsifying said electronic signal.

4,424,702

DEVICE FOR MONITORING THE CONCENTRATION OF AN AIR-VAPOR MIXTURE

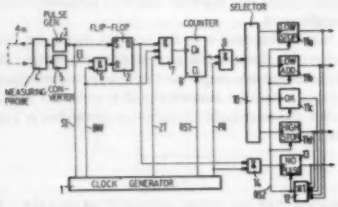
Holger Schoenewolf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,433

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111970

Int. Cl.³ G01N *29/02*

U.S. Cl. 73—24 **5 Claims**



1. A device for monitoring the concentration of an air-vapor mixture having a measuring probe inserted into said mixture, said measuring probe including an electroacoustical transducer for converting an electrical transmit pulse into ultrasonic signal pulses and a reflector for reflecting said ultrasonic signal pulses back to said transducer, said transducer reconverting a received ultrasonic signal pulse into an electrical receive pulse, said device further having a circuit for generating said transmit pulse and evaluating the transmit time of said ultrasonic signal pulse in said mixture and thereby determining the concentration of said mixture, said circuit comprising:

a high frequency clock pulse generator;

a binary counter having a plurality of counting stages for counting the clock pulses of said clock pulse generator;

a logic combinatorial circuit connected to selected ones of said outputs of the counting stages of said binary counter for generating said transmit pulse, said transmit pulse having a duty time which consists of a plurality of periods of said ultrasonic signal pulses;

said logic combinatorial circuit connected to other selected ones of said outputs of the counting stages of said binary counter for generating a control signal for controlling a gate circuit to which said receive pulse is supplied from said transducer, the duration and chronological position of said control signal relative to said transmit pulse defining an evaluation time span for said receive pulse;

a read only memory having address inputs respectively connected to the outputs of said counting stages of said binary counter, the addresses of said read only memory which are called during said evaluation time being classified in at least three ranges with continuous addresses, the information output from said read only memory being identical within said ranges but otherwise different; and

a register connected to the outputs of said read only memory for transfer of the memory content of said read only memory to said register triggered by said receive pulse.

4,424,703

DEVICE FOR MONITORING THE CONCENTRATION OF AN AIR-VAPOR MIXTURE

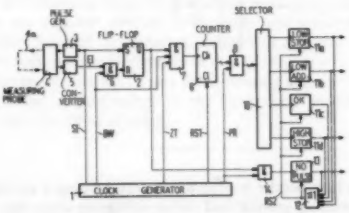
Hans Winter; Eduard Mair, and Holger Schoenewolf, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,434

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3112002

Int. Cl.³ G01N *29/02*

U.S. Cl. 73—24 **7 Claims**



1. A device for monitoring the concentration of an air-vapor mixture having a measuring probe inserted in a mixture to be monitored having an electroacoustical transducer for converting an electrical transmit pulse into ultrasonic signal pulses, a reflector for reflecting said ultrasonic signal pulses back to said transducer for reconversion of said ultrasonic signal pulses into an electrical receive pulse afer a transit time of said ultrasonic signal pulses in said mixture, said device having a circuit for evaluating said transit time and thereby determining the concentration of said mixture comprising:

a clock pulse generator for generating counting clock pulses and for periodically generating said transmit pulse;

a clock pulse counter for counting said clock pulses which elapse between the beginning of a transmit pulse and the beginning of a receive pulse;

at least three status memories having predetermined identical memory capacities;

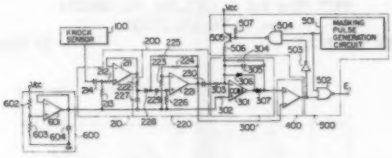
a selector means interconnected between said transducer and said status memories for supplying a signal to one of said status memories which reduces the remaining capacity of the selected status memory by one unit, said selector means supplying said signals to respective status memories as a function of the transit time of said ultrasonic signal pulses in said mixture,

whereby a status memory having a capacity which is first exhausted supplies a control signal for initiating a predetermined reaction for maintaining said concentration within a predetermined range.

4,424,704
KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Noboru Yamamoto, Kariya; Tomoatsu Makino, Okazaki; Ryoichi Okuda, Kariya, and Hiroshi Sakurai, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 8, 1981, Ser. No. 328,798
Claims priority, application Japan, Dec. 11, 1980, 55-175138
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 3 Claims



1. A knock detecting apparatus for an internal combustion engine comprising:

a knock sensor for detecting knocking components generated by the internal combustion engine and generating an electrical signal;

a knock discrimination level generator for generating a knock discrimination level signal in accordance with the output signal of said knock sensor;

a comparator for comparing the output signal of said knock sensor with said knock discrimination level signal and generating, depending on the result of comparison signal, a knock signal indicative of the existence of knocking; and

a mask means for generating a masking pulse for selectively inhibiting the transmission of signal from said comparator, said mask means making inoperative the knock discrimination level generation circuit when said comparator generates a knock signal during the period of said masking pulse generation,

wherein said mask means comprises a masking pulse generation circuit for generating masking pulses in synchronization with the rotation of the internal combustion engine, a first gate circuit for inhibiting the passage of said comparison output signal from said comparator in response to the pulse signal from said masking pulse generation circuit, a second gate circuit for allowing the transmission of said comparison output signal from said comparator in response to the pulse signal from said masking pulse generation circuit, and a buffer circuit for supplying said comparison output passing through said second gate circuit to said knock discrimination level generator.

4,424,705
ENGINE KNOCK SENSING APPARATUS

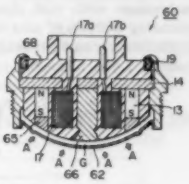
Tadashi Hattori, Okazaki; Masanori Hanaoka; Yukihide Hashiguchi, both of Toyota; Yoshinori Ootsuka, Okazaki, and Hiroaki Yamaguchi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 28, 1981, Ser. No. 335,284
Claims priority, application Japan, Dec. 26, 1980, 55-186273; Dec. 26, 1980, 55-186274
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 3 Claims

1. An apparatus for sensing a knocking taking place in an internal combustion engine having a cylinder block through which cooling water circulates comprising:

a diaphragm mounted to the block and directly responsive to a pulsation in pressure of the cooling water, said diaphragm being of a substantially partially spherical surface;

means adjacent said diaphragm for sensing the pulsating movement thereof in a manner like alternating current; and



means for producing an output corresponding to said pulsation in fluid pressure.

4,424,706
ENGINE WITH KNOCK SENSING USING PRODUCT COMPONENT OF KNOCK VIBRATION SIGNAL

Hilario L. Oh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 19, 1982, Ser. No. 379,643
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 4 Claims

1. A method of detecting knock in an internal combustion engine of the type subject to knock induced vibrations of at least two characteristic knock frequencies and noise vibrations not associated with knock, comprising the steps of:

generating a signal having components at least in accord with the knock induced vibrations of the engine at the two characteristic knock frequencies;

processing said signal to produce a product signal having a product component with a magnitude proportional to the magnitudes of said signal components and a frequency equal to the difference of said characteristic knock frequencies, said step increasing the signal to noise ratio of said signal; and

detecting the existence of a predetermined magnitude of said product component to sense the presence of knock.

4,424,707
METHOD AND DEVICE FOR THE ELECTROPNEUMATICAL TESTING OF THE AIR PERMEABILITY OF CIGARETTES

Giovanni Pezzi, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Sep. 25, 1981, Ser. No. 305,852
Claims priority, application Italy, Oct. 7, 1980, 12674 A/80
Int. Cl.³ G01N 15/00
U.S. Cl. 73—38 7 Claims

1. The method of electropneumatically testing cigarettes to determine whether the air permeability thereof is acceptable, comprising the steps of:

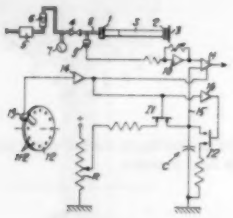
applying a pneumatic pressure to said cigarettes;

measuring the pressure within each of said cigarettes during application of said pneumatic pressure thereto;

transforming said pressure measurement into an electric measurement signal, said electric measurement signal having a saw-tooth shape with an ascending portion which reaches a maximum value followed by a rapidly descending portion, the ascending portion of said measurement signal increasing at a predetermined rate when

pressure is applied to a cigarette having an acceptable air permeability;

generating an electric reference signal having a saw-tooth shape in synchronism with said electric measurement signal, the ascending portion of said reference signal increasing at approximately said predetermined rate; and



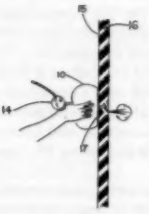
comparing said measurement and reference signals in a comparator, the output of said comparator having a first value indicating that the cigarette is acceptable when the maximum value of said measurement signal is not less than the corresponding value of said reference signal, and a second value indicating that the cigarette is rejected when the maximum value of said measurement signal is less than the corresponding value of said reference signal.

4,424,708

FUEL CELL LEAK DETECTOR

Gaston Meuleman, Hawthorne, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Jan. 15, 1982, Ser. No. 339,748
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—40 **8 Claims**



1. A method of leak testing non-pressurized vessels to find the location ruptures therein, comprising the steps of:

providing a hand held freely movable, leak testing device comprised of a gas impermeable resilient body having an aperture in one portion and gas communication means permitting pressurized gas to be introduced internally of said resilient body, said gas normally being free to exit said body through said aperture upon location of a rupture in the vessel,

connecting said leak testing device to a regulatable gas pressure source to supply a regulated gas pressure to said resilient body of said leak testing device,

pressing said leak testing device with the aperture thereof against a surface of the vessel with sufficient pressure to form an airtight seal between said surface of the vessel and said leak testing device,

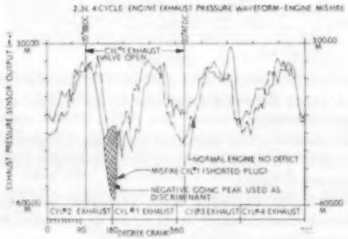
moving said leak testing device over said surface of the vessel while maintaining said airtight seal between said leak testing device and said surface whereby said leak testing device will tend to collapse as it is moved over a rupture in the vessel due to a differential in pressure between said engaged surface of said leak testing device and ambient atmospheric pressure on the opposite surface of the vessel thereby indicating the location of said rupture in the vessel.

4,424,709

FREQUENCY DOMAIN ENGINE DEFECT SIGNAL ANALYSIS

Raymond C. Meier, Jr., Canton, and Stewart V. Gable, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00901, § 371 Date Jul. 6, 1982, § 102(e) Date Jul. 6, 1982
PCT Filed Jul. 6, 1982, Ser. No. 409,371
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **29 Claims**



1. A signal analyzer for detecting engine defects including:

an engine speed sensor means for detecting engine speed and generating an electrical engine speed signal;

an exhaust pressure sensor means for detecting engine exhaust pressure and generating an electrical exhaust pressure signal;

an intake manifold vacuum sensor means for detecting engine intake manifold vacuum and generating an electrical intake manifold vacuum signal;

a crankcase pressure sensor means for detecting blowby gas pressure in the engine crankcase and generating an electrical crankcase pressure signal;

an oil pressure sensor means for detecting engine oil pressure and generating an electrical oil pressure signal;

a frequency domain analyzer circuit means coupled to said engine speed sensor means exhaust pressure sensor means, intake manifold vacuum sensor means, crankcase pressure sensor means and oil pressure sensor means for generating a frequency domain spectrum signal from the outputs of said coupled sensor means; and

a comparison means coupled to said frequency domain analyzer circuit means for comparing said frequency domain spectrum signal to a normal engine signal thereby determining at what frequencies differences between the two signals exist, such differences being indicative of engine defects.

4,424,710

EYEGLASS NOSE PAD WEIGHT DISTRIBUTION MEASUREMENT

John E. Von Nortwick, II, 3055 Glen Oak Ave. North, Clearwater, Fla. 33519

Filed Jul. 13, 1981, Ser. No. 282,532
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—172 **2 Claims**

1. A method for determining whether the weight of a pair of eyeglasses exerted on the nose of the wearer by the first and the second nose pads of the eyeglasses is equally distributed on the first and the second sides of the nose, comprising the steps of:

(1) inserting a frictional element between the first nose pad and the first side of the nose of the wearer;

(2) pulling said frictional element with a force measuring

device until said frictional element begins to slide between the first nose pad and the first side of the nose of the wearer;

(3) reading from indicia associated with said force measuring device the relative amount of tension imparted to said frictional element when said frictional element begins to

slide between the first nose pad and the first side of the nose of the wearer and noting said reading;

(4) repeating steps (1) to (3) with respect to the second nose pad and the second side of the nose of the wearer; and

(5) comparing the amounts of the two noted tensions, with equal amounts being indicative of equal distribution of the weight of the eyeglasses on the nose of the wearer.

4,424,711

PROCESS AND APPARATUS FOR ADJUSTING A BALANCING MACHINE

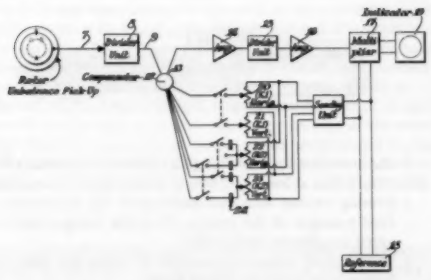
Alfred Giers, Roodorf, and Paul Holdinghausen, Bickenbach, both of Fed. Rep. of Germany, assignors to Carl Schenck AG, Fed. Rep. of Germany

Filed Oct. 29, 1981, Ser. No. 316,121

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040713

Int. Cl.³ G01M *1/16*

U.S. Cl. 73—462 **3 Claims**



1. A process for adjusting a hard bearing balancing machine with respect to a particular rotor to be investigated on the machine consisting of the steps of obtaining a receiver signal which in addition to the unbalance value of the rotor contains a multiplication product which is independent of the unbalance of the rotor, one factor of the multiplication product being the eccentric distance between the rotor axis and rotational axis of the balancing machine, and another factor being the mass of the rotor under investigation, and prior to subsequent processing rendering inactive the mass of the rotor under investigation by the steps of multiplication of the receiver signal with the reciprocal value of the mass, elimination of the influence of eccentricity in the signal, and further multiplication of the signal free of the influence of eccentricity with the mass value of the rotor under investigation to thereby produce a signal representative of rotor unbalance.

4,424,712

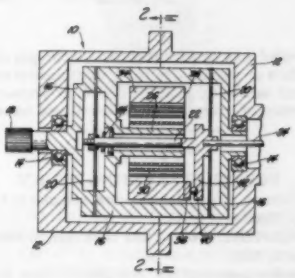
WHEEL DECELERATION SENSOR

Lawrence E. Scheer, Phoenix, Ariz., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 14, 1981, Ser. No. 330,056

Int. Cl.³ G01P *15/03*

U.S. Cl. 73—514 **4 Claims**



1. In a wheel deceleration control mechanism for a vehicle skid control brake system, an improved sensor for measuring road wheel deceleration; said improved sensor comprising a circular housing (16) driven at a speed related to road wheel speed; an axially shiftable output member located within the housing, said output member comprising a stem on the housing rotational axis; means for suspending the stem out of direct contact with the housing surface, said suspending means comprising two archimedes springs trained between the housing and stem at axially spaced points along the stem length for accommodating axial motion of the stem while preventing relative rotation between the stem and housing; an annular inertia mass (34) disposed within the housing out of direct contact with the housing surface; a suspension spring (30) trained between the housing and the inertia mass to exert a resilient force tending to rotate the inertia mass against the direction of housing rotation, whereby angular deceleration of the housing enables the inertia mass to advance angularly relative to the housing, and angular acceleration of the housing enables the suspension spring to angularly retard the inertia mass relative to the housing; amd cam-cam follower means between the inertia mass and output member for translating advance or retard action of the inertia mass into axial motions of the output member.

4,424,713

SILICON DIAPHRAGM CAPACITIVE PRESSURE TRANSDUCER

Paul M. Kroninger, Jr., Harleysville; Paul J. Freud, Furlong, and Dean P. Updike, Bethlehem, all of Pa., assignors to General Signal Corporation, Stamford, Conn.

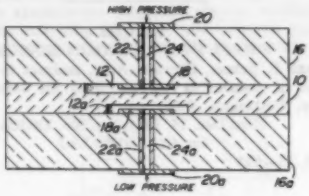
Filed Jun. 11, 1982, Ser. No. 387,397

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—718 **14 Claims**

1. In a pressure transducer of the capacitor type in which a plate of electrically conductive semi-conductor material is sandwiched between a pair of plates of inorganic electrical insulating material electrostatically bonded thereto, wherein a pair of concentric circular recesses are etched in said plates to form cavities on opposing sides of said conductive plate to define a diaphragm area on said conductive plate, apertures are drilled through said insulating plates, and the surfaces of one of said insulating plates in said cavities has deposited thereon an electrically conductive film forming a capacitor with the dia-

phragm area of said conductive plate, the improvement comprising:



a stress relief area surrounding said diaphragm area so that deflection of said conductive plate is unrestrained by the adjacent insulating plate on the high pressure side for prevention of overpressure failure of said transducer.

4,424,714

VORTEX GENERATING DEVICE

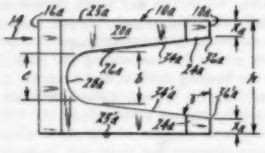
Archie G. Johnson, Cedar Rapids, Iowa, assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00441, § 371 Date Apr. 9, 1982, § 102(e) Date Apr. 9, 1982

Continuation-in-part of Ser. No. 258,977, Apr. 30, 1981, abandoned. This PCT application Apr. 9, 1982, Ser. No. 380,842

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **16 Claims**



1. A device for generating Karman vortices in a fluid stream, said device comprising:

a narrow elongate plate member having an axis of elongation parallel to the direction of flow of said fluid stream, said elongate plate member having a leading edge and a trailing edge with respect to said direction of flow, said elongate plate member having side surfaces spanning said leading edge and said trailing edge, said side surfaces being essentially parallel to said direction of flow, said elongate plate member also having at least one aperture, said aperture intersecting at least one said side surface to form at said side surface a leading aperture edge with respect to said direction of flow such that said leading aperture edge forms a shedding corner for the generation of vortices, and wherein said aperture further intersects said trailing edge of said elongate plate member.

4,424,715

ULTRASONIC MEASURING DEVICE

Henning M. Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

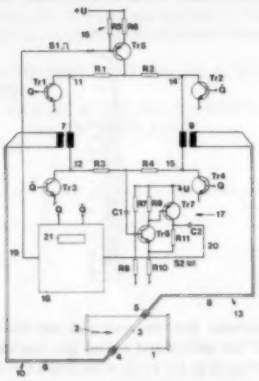
Filed Jun. 22, 1981, Ser. No. 275,809

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025788

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.28 **8 Claims**

1. An ultrasonic measuring unit, comprising, quadrupole circuit means, two ultrasonic converter circuits which are alternately and complementary operable as transmitter and receiver circuits, said two converter circuits each having terminals on opposite sides of said quadrupole circuit means, said quadrupole circuit means having terminating load impedances for said ultrasonic converter circuits, said quadrupole circuit means having a transmission signal generator in the form of a current generator on the input side thereof and a receiver amplifier on the output side thereof, switching means for said



quadrupole circuit means for alternating the operation of said converter circuits, said load impedances being small compared with the impedances of said current generator and of said receiver amplifier for respectively forming substantially equal terminating impedances for said two converter circuits.

4,424,716

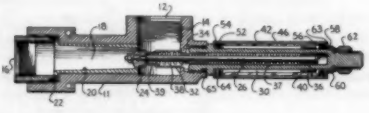
HYDRAULIC FLOWMETER

Wilfred E. Boehringer, Fullerton, and James V. Walker, Redondo Beach, both of Calif., assignors to McDonnell Douglas Corp., Long Beach, Calif.

Filed Jun. 15, 1981, Ser. No. 273,599

Int. Cl.³ G01F *1/24*

U.S. Cl. 73—861.56 **25 Claims**



1. A flowmeter for measuring fluid flow in a forward flow direction within at least a portion of a fluid system comprising:

a housing having inlet and outlet ports for connection to fluid passages of the system, the ports being axially oriented in different directions;

a piston travel passage connected in series for fluid flow between the inlet and outlet ports;

a piston mounted within said passage for travel longitudinally thereof;

means for developing movement of the piston within said passage in accordance with fluid flow therethrough;

a guide chamber extending from the housing and encasing a rod connected to the piston, the guide chamber and rod each having respective proximal ends adjacent the housing and distal ends remote therefrom;

an armature of magnetic material mounted on the rod for travel with the rod and piston;

a magnet positioned outside the guide chamber and slidable therealong in alignment with the armature for indicating movement of the piston in the measured flow direction;

balancing means for urging the piston to a zero reference

position in the absence of flow through the flowmeter in either direction; and

an enlarged fluid region adjacent the zero reference position of the piston at one end of the piston travel passage, the piston being movable into said enlarged fluid region upon fluid flow through the flowmeter in a reverse flow direction opposite to forward flow, thereby eliminating restriction to fluid flow by the piston and permitting reverse fluid flow substantially unimpeded.

4,424,717

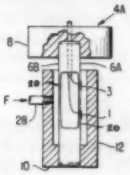
FORCE TRANSDUCER

Jack M. White, Novelty, Ohio, assignor to The Babcock & Wilcox Company, New Orelans, La.

Filed Oct. 8, 1981, Ser. No. 309,635

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—862.65 **2 Claims**



1. In a transducer generating an output signal varying in linear proportion to changes in the magnitude of a force, a flexure assembly comprising a pair of parallel spaced apart flexures each having a maximum cross-sectional area at either end, a single plane rectangular rear face and opposed rectangular front faces converging to a thin middle section, a common fixed base in which one end of each of said flexures is anchored and cantilevered from, a common movable base comprising the closed end of a hollow cylinder surrounding said flexure assembly in which the opposite end of each of said flexures is anchored and cantilevered from, a force receiving linearly movable rod positioned normal to the longitudinal center-line of said flexure assembly and in line with the centers of said thin middle sections anchored in the cylindrical wall of said hollow cylinder to produce a linear displacement of said movable base normal to the longitudinal center-line of said flexure assembly proportional to the magnitude of a force applied to said movable rod, and a strain gage mounted on the rear face of at least one of said flexures in an area subtended by one of the front faces thereof to generate an output signal proportional to the strain in said area produced by a force applied to said movable rod.

4,424,718

AIR ACTUATED ROTARY VIBRATOR WITH RESILIENT SHOCK MOUNT TO PROVIDE LINEAR MOVEMENT

Theodore S. Wadensten, P.O. Box 8, Stilson Rd., Wyoming, R.I. 02898

Division of Ser. No. 156,792, Jun. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 142,469, Apr. 21, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,570

Int. Cl.³ F16H *33/10*

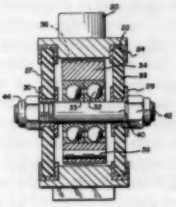
U.S. Cl. 74—87 **12 Claims**

1. An air actuated unidirectional vibrator apparatus which is adapted to provide a force for moving a housing secured to an exterior member such as a screen, conveyor, sieve and the like, said vibrator apparatus including:

(a) a housing having a central bore within which the vibrator apparatus is carried, said housing having an air inlet and outlet to and from this central bore and with means for connecting pressurized air to the inlet and means for connecting exited air from said interior bore through this outlet;

(b) a shaft carried within said central bore and disposed to retain the vibration apparatus in a precise configuration;

(c) at least one eccentric weight carried by said shaft and within said bore and rotatable at a prescribed speed around the axis of said shaft, said moved weight producing the desired forces producing amplitude and rate of vibration;



(d) at least one resilient shock absorbing means formed as a substantially tubular member and disposed within the central bore of the housing, said resilient shock absorbing tubular member affixed to an outer ring and an inner ring means and secured so as to remain in this secured condition and position during vibrational actuation, and

(e) means for securing said housing to an exterior member to be vibrated and with the securing of said vibrator apparatus the vibration forces produced are transferred through the resilient shock absorbing means and the rotating of the eccentric weight produces a unidirectional force.

4,424,719

POSITIONING MECHANISM FOR THE PEDALS OF POWERED VEHICLES

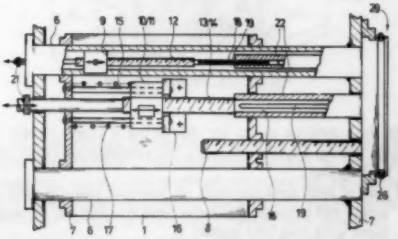
Norbert Pretsch, Stephanstrasse 1, 8871 Kammeltal-Behlingen, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,865

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 0742380

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—89.15 **12 Claims**



1. Positioning mechanism for the pedals of motor vehicles comprising: a movable carriage carrying pedals and terminal members of associated actuating mechanisms coupled to each, an adjusting spindle for positioning said carriage, a threaded sleeve for each pedal and arranged so as to move with the pedal associated to it, each said sleeve having terminal fittings of linkages associated with each of actuating mechanisms connected to each of the pedals, each terminal fitting having a threaded rod passing through the threaded sleeve associated with it and being connected at one end in a free-to-turn relationship to an extending linkage element, a drive element, said threaded rod being connected at the other end telescopically to

said drive element, said threaded rod being keyed to said drive element so that the rod turns with the drive element, the threaded rods having the same thread pitch as said adjusting spindle, said drive elements being driven in the same manner as the adjusting spindle, said carriage and each said threaded sleeve being uniformly displaceable by common drive means and said threaded rods being substantially stationary in axial direction thereof, said threaded rods being all rotated uniformly for adjusting the threaded sleeves and said adjusting spindle so that linkages associated with the pedals remain in position when said carriage is displaced, said pedals being actuatable even when said carriage together with said pedals are in motion, said threaded sleeves being mounted movably on said carriage so that said threaded sleeves are moved relative to said carriage upon actuation of said pedals, pinions associated with the threaded rods being fitted to drive bushings that are secured against moving in an axial direction and into which the threaded rods engage telescopically in keyed relationship so that the bushings and threaded rods turn together, said carriage having a cantilevered pedal carrier to one side on which at least a first pedal is mounted by a bushing on a carriage side, said bushing having a fork operating in conjunction with the associated threaded sleeve, cranks associated with the other pedals and passing through said bushing, each crank having a fork acting in conjunction with its associated threaded sleeve, guide rods, said carriage being guided on said guide rods, a housing, said guide rods being secured to said housing.

4,424,720

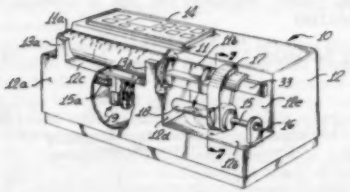
MECHANISM FOR SCREW DRIVE AND SYRINGE PLUNGER ENGAGEMENT/DISENGAGEMENT

Richard M. Bucchianeri, Escondido, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Dec. 15, 1980, Ser. No. 216,768

Int. Cl.³ F16H *25/20*; A61M *5/00*

U.S. Cl. 74—89.15 **51 Claims**



33. In a syringe pump for delivering a pump stroke to a syringe having a syringe plunger, the combination comprising:

a lead screw;

a pair of split nuts disposed on opposite sides of said lead screw and mounted for movement into and out of engagement with said lead screw;

control means for controlling the movement of said split nuts; and

plunger mover means, coupled to said control means, for pushing against the free end of the syringe plunger,

said plunger mover means being mounted for selective rotation between a first position, in which said plunger mover means engages the free end of the plunger and actuates said control means to an engaged state in which said split nuts are engaged to said lead screw, and a second position, in which the plunger mover means is disengaged from the free end of the plunger and actuates said control means to a disengaged state in which said split nuts are disengaged from said lead screw.

4,424,721

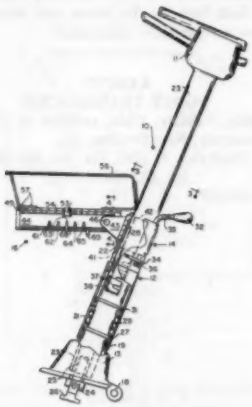
ADJUSTABLE STEERING COLUMN

David W. Deacon, Newark, Calif., assignor to Paccar Inc., Bellevue, Wash.

Filed Apr. 30, 1981, Ser. No. 258,934

Int. Cl.³ B62D *1/18*; G05G *5/24*; F16C *17/00*

U.S. Cl. 74—493 **10 Claims**



1. In a tilt steering wheel system for a vehicle including a steering column connected pivotally to vehicle structure for pivotal movement within a vertical longitudinal plane, an improved latching mechanism comprising:

a detent component connected to and movable with the steering column, including a plurality of position detents in one edge, arranged in a series:

at least two latches positioned adjacent to the series of detents and means mounting the latches for movement toward and away from the detents, each latch being shaped for engagement in the detents;

spring means urging each latch in the direction of engagement with the detents; and

release means connected to vehicle structure and associated with the latches for retracting all latches when moved toward an unlatching position;

the spacing between adjacent latches being different from the spacing between adjacent detents, so that only one latch enters a detent at a time, whereby as the steering column is moved through its range of tilt, alternating ones of the latches engage in detents, and the selectable tilt positions of the column are more closely spaced than the detents.

4,424,722

RACK AND PINION DRIVE ARRANGEMENT

Eric A. Jackson, and George M. Turner, both of Derby, England, assignors to Perard Engineering Ltd., Derbyshire, England

Filed Jan. 14, 1981, Ser. No. 225,141

Claims priority, application United Kingdom, Jan. 18, 1980, 8001770

Int. Cl.³ F16H *1/04, 55/12, 1/20*

U.S. Cl. 74—422 **15 Claims**

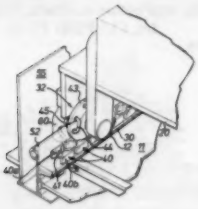
1. A rack and pinion drive arrangement, comprising:

a rack having a plurality of rack formations, each of said rack formations comprising a pair of spaced teeth defining a channel therebetween;

a pinion having a rotatable body received in said channel, and having a plurality of pinion formations movably mounted in said body for articulation relative thereto and engageable with said rack formations,

said body including a plurality of pairs of apertures for receiving said pinion formations,

each of said pinion formations being defined by a closed band extending through a corresponding pair of said apertures and projecting to opposite sides of said body,



each of said pinion formations being a loose fit in said apertures to provide both horizontal and vertical articulation relative to said body; and

drive means for rotating said pinion.

4,424,723

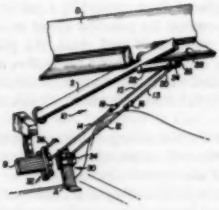
PORTABLE HAND CONTROL APPARATUS

Don A. Gockel, 6640 N. Columbia Ave., Moorpark, Calif. 93021

Filed Sep. 1, 1981, Ser. No. 298,375

Int. Cl.³ G05G *1/14, 13/00*

U.S. Cl. 74—482 **8 Claims**



1. A portable hand control device for operating the accelerator and brake foot pedals of a motor vehicle comprising:

an accelerator control rod and a brake control rod;

clamping means connected to one end of each control rod for removably securing said control rods to a respective foot pedal;

handle means connected to the other end of said brake control rod for operating the brake foot pedal; and

means for cooperatively linking said accelerator control rod to said handle means such that the other end of said accelerator control rod is movable relative to said handle means to operate the accelerator foot pedal;

said handle means being free of operative connection to said motor vehicle apart from the connections to said foot pedals.

4,424,724

MULTI-POSITION RATCHET MECHANISM

John R. Bookwalter, Brattleboro, Vt., and Alan I. West, Concord, Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Oct. 9, 1981, Ser. No. 309,951

Int. Cl.³ G05G *5/06*

U.S. Cl. 74—540 **5 Claims**

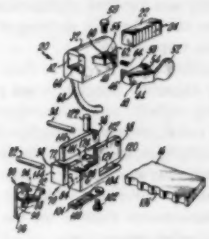
1. A multi-position ratchet mechanism comprising:

a generally rectangular ratchet holder having top, bottom, front, rear, left and right surfaces;

said ratchet holder having a ratchet slot extending from its rear surface toward its front surface and extending from said top to said bottom surface;

a pivot pawl pivotably connected to said holder and disposed in said ratchet slot and including an integral actuation lever extending outside of said ratchet slot for ready actuation by a user;

means attached to said ratchet holder for biasing said pivot pawl into engagement with said pivot ratchet;



a ratchet pivot housing pivotably mounted on said ratchet holder;

a curved pivot ratchet depending from said ratchet pivot housing into said ratchet slot of said ratchet holder and operatively engaging said pivot pawl whereby the pivot angle of said pivot housing with respect to said ratchet holder may be selectively varied.

4,424,725

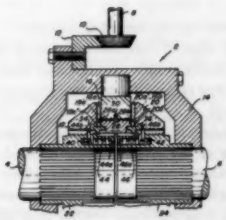
LOCKING DIFFERENTIAL MECHANISM WITH IMPROVED HOLDOUT RING AND SPRING RETAINER

James R. Bawks, St. Clair Shores, Mich., assignor to Tractech, Inc., Warren, Mich.

Filed Sep. 19, 1980, Ser. No. 188,668

Int. Cl.³ F16H *35/04*

U.S. Cl. 74—650 **2 Claims**



1. In a differential mechanism including an annular spider member (16) adapted to be rotatably driven by an input shaft (8); a pair of annular driven clutch members (18, 20) arranged coaxially with and on opposite sides of said spider member, respectively; a pair of coaxially arranged side gears (22, 24) concentrically arranged within said clutch members, respectively, said clutch members being non-rotatably connected with the associated side gears for axial displacement relative to said spider member, respectively, said side gears being adapted for non-rotatable concentric connection with the adjacent ends of a pair of output shafts (4, 6), respectively; spring means (40, 42) normally biasing said clutch members axially together toward clutch-engaged positions relative to said spider driving member; means including an annular center cam member (28) rotatably mounted concentrically within, and retained against axial displacement relative to, said spider member, said central cam member being operable when one of said side gears overruns the other to displace the clutch member associated with the overrunning side gear axially away from said spider mem-

ber toward a disengaged position relative thereto; and holdout ring means for maintaining said assoiated driven clutch member in the disengaged condition as long as said one side gear overruns the other side gear; the improvement wherein

(1) said holdout ring means comprise

(a) a pair of generally annular split resilient holdout rings (**34**, **36**) arranged concentrically within said driven clutch members, respectively;

(b) said holdout rings being resiliently biased radially outwardly into frictional engagement with corresponding inner circumferential surfaces of said driven clutch members, respectively;

(c) said holdout rings having at their remote ends outer radially extending annular flange portions (**34***a*, **36***a*) extending radially within corresponding inwardly extending radial grooves contained in the inner circumferential surfaces of said driven clutch members, respectively, whereby each of said holdout rings is connected for rotational movement with, and is retained against axial displacement relative to, the associated driven clutch member, respectively;

(d) said holdout rings including at their adjacent ends radially inwardly directed annular flange portions (**34***b*, **36***b*), respectively, and a plurality of circumferentially spaced holdout lugs (**34***c*, **36***c*) that extend axially within corresponding slots (**28***b*), contained in the adjacent ends of said center cam member, respectively, said slots having in longitudinal cross-section a configuration defining holdout shoulders (**28***c*), said lugs being so dimensioned and having such a configuration that when one of the side gears is in an overrunning condition, the associated holdout ring is slightly axially and rotationally displaced relative to the central cam member from an inoperable central position relative to the associated slot to an operable holdout position on one of said shoulders in which the associated driven clutch member is maintained disengaged from said spider driving member;

(2) wherein said spring means comprises

(a) a pair of aligned compression springs (**40**, **42**) arranged concentrically within said holdout rings for reaction at their remote ends with the associated side gears, respectively; and

(b) spring retainer means for transmitting the biasing force reactions at the adjacent ends of said springs to said holdout rings, respectively, said spring retainer means including a pair of aligned spring retainer rings (**44**, **46**) arranged concentrically within said holdout rings, respectively, said retainer rings including at their remote ends radially outwardly extending flange portions (**44***b*, **46***b*) in engagement with the inwardly directed flange portions of said holdout rings, respectively, said retainer rings including at their adjacent ends radially inwardly directed flange portions (**44***a*, **46***a*) that are engaged by the adjacent ends of said compression springs, respectively;

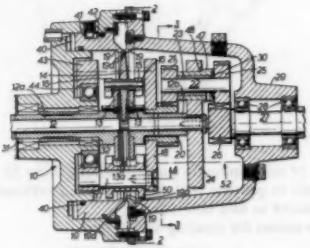
(3) and further wherein each of said driven clutch members includes one set of driven teeth (**18***a*, **20***a*) of continuous uniform configuration, said spider member having driving teeth (**16***a*, **16***b*) of the same configuration as, and in enmeshing engagement with, first portions (**18***a'*, **20***a'*) of said driven clutch member teeth, and said center cam member having at opposite ends overrunning clutch disengaging teeth (**28***a*) in enmeshing engagement with second portions (**18***a''*, **20***a''*) of the teeth of said driven clutch members, respectively.

4,424,726

VARIABLE SPEED EPICYCLIC TRANSMISSION DEVICES

Peter A. Galbraith, West Midland, Australia, assignor to Galbraith Engineering Pty. Ltd., West Midland, Australia

Continuation of Ser. No. 856,009, Nov. 30, 1977, abandoned.
This application Oct. 28, 1980, Ser. No. 201,671
Claims priority, application Australia, Dec. 16, 1976, 8521/76
Int. Cl.³ F16H *15/50*
U.S. Cl. 74—796 **4 Claims**



1. In an infinitely variable speed epicyclic drive mechanism coupled to an epicyclic gear train and comprising:

a pair of sun discs mounted on a shaft for rotation therewith, at least one of said discs being capable of limited axial movement along the shaft and being, at least when the drive mechanism is in operation, loaded towards the other disc;

a plurality of planet discs carried by a carrier member which is in turn mounted for rotation about an axis coaxial with the axis of rotation of said shaft, the planet discs being individually rotatable about a respective axis substantially parallel to said shaft and being movable, on said rotation of the carrier member, in a plane normal to the axis of said shaft;

a pair of spaced non-rotating annular members substantially coplanar with and concentric with said sun discs, an inner periphery of said annular members and an outer periphery of said sun discs embracing and frictionally engaging said planet discs at least when the drive mechanism is in operation; and

means operable to vary the radial position of said planet discs with respect to said annular members and said sun discs;

the improvement wherein said loading of one of the sun discs towards the other is achieved by way of intermeshing helical sun and planet gears in said epicyclic gear train, said loading being transmitted to said sun discs by way of a cage member which is mounted on said shaft in contact with said one sun disc and carries said helical planet gears.

4,424,727

METHOD FOR MAKING A DIE FOR STAMPING METAL REFLECTORS

John J. Mader, Tewksbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

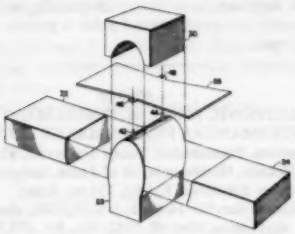
Filed Sep. 15, 1980, Ser. No. 187,311
Int. Cl.³ B21K *5/20*; B21D *37/10*
U.S. Cl. 76—107 R **6 Claims**

1. A method for making a metal stamping tool suitable for use in forming a concave, open ended reflector having a cross-sectional shape in the form of a nonconic, asphere that is bilaterally symmetric about a central axis therethrough and has a radius of curvature that continuously increases with distance along said axis comprising the steps of:

constructing a trial metal stamping tool having a cross-sectional shape in the form of nonconic, asphere that is more concave than the reflector, said trial tool curve being of

the same general shape as said reflector but having a continuously changing radius of curvature that is generally smaller than that of the reflector at corresponding points along the reflector axis of symmetry;

forming a trial reflector by stamping with said trial tool a metal blank workpiece of predetermined thickness and material composition; and



constructing a final metal stamping tool having a cross-sectional shape whose radius of curvature varies continuously along the reflector axis of symmetry in accordance with the ratio between said radius of curvature of said trial tool and said trial reflector at corresponding points along the reflector axis of symmetry.

4,424,728

ALLEN WRENCH HANDLE

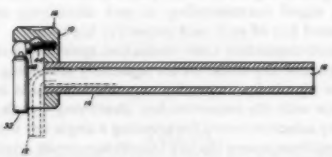
Paul M. MacDonald, 17 Moors Cir., Scituate, Mass. 02066

Continuation-in-part of Ser. No. 106,479, Dec. 26, 1979, Pat. No. 4,308,770. This application Apr. 10, 1981, Ser. No. 253,066

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ B25B *13/00*

U.S. Cl. 81—177 A **2 Claims**



1. A handle for use with an L-shaped tool, comprising

(a) a tubular shank portion formed with an axial passage of a length and width sufficient to accommodate the long leg of said tool,

(b) a head mounted to one end of said shank portion and formed with a socket therein open to said head and to one side directly opposite said passage, and,

(c) a latch pivotally mounted to said head about an axis perpendicular to said passage and offset to one side thereof whereby said latch may be pivoted in and out of said socket to restrain that portion of said tool located in said socket when said latch is closed and to allow removal of said tool when said latch is open,

(d) spring means engaging the inner end of said latch for biasing said latch in either of two operable positions; and

(e) a cup trapped between one end of said spring and the rounded end of said latch.

4,424,729

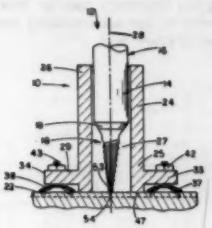
ACCESSORY FOR SCREW DRIVER

Ralph S. Jacobson, 27970 Le Dunne Ave., R. R. #6, Aldergrove, Canada V0X 1A0

Filed Aug. 13, 1981, Ser. No. 292,682

Int. Cl.³ B25B *23/08*

U.S. Cl. 81—451 **7 Claims**



1. An accessory for use with a screw driver and screw, the screw driver having a shank and screw engaging bit for engaging a head of the screw for screwing the screw into a surface, the accessory including a sleeve having a bore to accept freely the screw driver bit and screw therein so as to permit rotation of the screw driver and screw relative to the bore, the accessory being further characterized by:

releasable securing means mounted on the sleeve so as to engage the surface when an inner end of the sleeve is generally adjacent the surface, the releasable securing means having:

(a) support means extending outwardly from the sleeve as to be adjacent the inner end of the sleeve, the support means having an opening therein,

(b) suction cup means cooperating with the support means and adapted to engage the surface when the inner end of the sleeve is generally adjacent the surface, the suction cup means having an essentially rigid tube member having inner and outer ends, the inner end of the tube member being open and adapted to make sealing contact with the surface, and the outer end of the tube member having a flexible diaphragm member extending thereacross so as to close the outer end of the tube member,

(c) actuating means extending through the opening of the support means and cooperating with the diaphragm and the support means so that in a first position, the actuating means can be depressed to deflect the diaphragm to displace air from the suction cup by reducing effective volume of the suction cup; and, to attain a second position from the first position, the inner end is then sealed against the surface and the actuating means is moved relative to the support means to deform the diaphragm from the first position to increase volume of the suction cup so as to actuate the suction cup to reduce pressure therein so as to grip the surface.

4,424,730

ELECTRONIC MUSICAL INSTRUMENT

Sadaaki Ezawa, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Nov. 25, 1981, Ser. No. 324,849

Claims priority, application Japan, Nov. 28, 1980, 55-167865

Int. Cl.³ G10H *1/00*

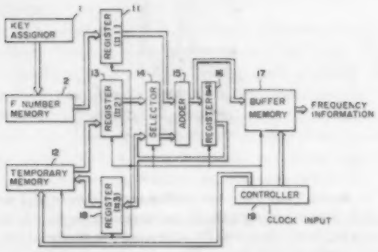
U.S. Cl. 84—1.01 **3 Claims**

1. A frequency information generating device for electronic musical instruments having a plurality of keys each corresponding to a note and a key assignor for providing key information corresponding to each key, each key information having a time slot in one of a plurality of channels, the device, comprising:

a frequency number memory for storing a frequency number corresponding to the note of each key and delivering the frequency number corresponding to the key information from the key assignor;

accumulating means composed of a selector, an adder and a register;

a temporary memory responsive to the output of said register for storing the results of accumulation obtained by accumulating the frequency number from the frequency number memory by the accumulating means a predetermined number of times; and



a buffer memory responsive to the output of said adder for storing the result of each accumulation by the accumulating means and outputting frequency information;

the output of the frequency number memory being applied to one input of the adder of the accumulating means; either one of the output of the temporary memory or the output of the register having stored therein the output of the adder being selectable by the selector for input to another input of the adder; and the output of the register being applied to the input of the temporary memory.

4,424,731

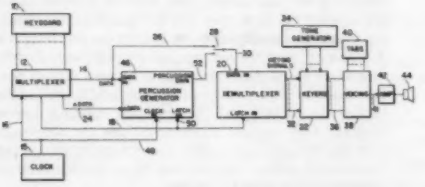
PERCUSSION GENERATOR HAVING SNUB CONTROL

Stephen L. Howell, Huntingburg, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Jul. 14, 1981, Ser. No. 283,275

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **20 Claims**



1. In an electronic musical instrument including a keyboard having playing keys, multiplex means for repeatedly scanning said keyboard and producing a time division multiplexed serial data stream comprising a cyclically repeating sequence of time slots associated respectively with the keys and keydown pulses in those time slots associated with depressed keys of the keyboard, demultiplex means for demultiplexing the data stream, keyer-tone generator means responsive to the demultiplex means for producing selected tones, and new keydown detect means responsive to key actuation for producing a control pulse each time and only when a key not already depressed is depressed, the control pulse having a pulse width wider than a single scan of the keyboard, a percussion generator interposed between the multiplex and demultiplex means comprising:

a data input connected to the serial data stream,

a control input operatively connected to the new key detect means to receive the control pulse,

an output operatively connected to the demultiplex means,

gating means responsive to the control pulses and to the data stream for passing to said output each keydown pulse in said data stream which first appears in the data stream at the same time as a currently occurring control pulse in present on said control input and continuing to pass said each keydown pulse only substantially as long as said currently occurring control pulse is present on said control input.

4,424,732

ELECTRONIC MUSICAL INSTRUMENT WITH INTERMANUAL PERFORMANCE FACULTY

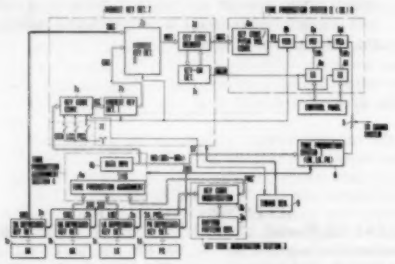
Akio Imamura, Hamamatsu; Yasuji Uchiyama, Hamakita, and Akira Nakada, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 114,733, Jan. 24, 1980, abandoned. This application May 10, 1982, Ser. No. 376,544

Claims priority, application Japan, Jan. 29, 1979, 54-8870; Jan. 29, 1979, 54-8871

Int. Cl.³ G10H *1/22*

U.S. Cl. 84—1.17 **8 Claims**



1. An electronic musical instrument comprising:

a plurality of separate keyboards, each said keyboard provided with a plurality of keys;

key detectors provided for each of said respective keyboards for generating a key identifying signal, each key identifying signal corresponding to and identifying each depressed key of each said respective keyboard;

keyboard-dependent tone production systems provided for respective key detectors for separately producing musical tone signals for respective separate keyboards in accordance with the respective key identifying signals; and

priority selection means for selecting a single key identifying signal from among the key identifying signals produced by said key detectors in accordance with a predetermined common order of priority that is established throughout the plurality of keyboards.

4,424,733

APPARATUS FOR AN AIRCRAFT FOR DROPPING OBJECTS

Max Degen, Lucerne, Switzerland, assignor to Schweizerische Eidgenossenschaft Vertreten Durch Die Gruppe Für Rüstungsdienste, Emmen, Switzerland

Filed Dec. 29, 1980, Ser. No. 220,825

Claims priority, application Switzerland, Sep. 29, 1980, 7264/80

Int. Cl.³ F41F *5/02*

U.S. Cl. 89—1.5 R **10 Claims**

1. An apparatus for an aircraft for dropping objects, especially explosive objects such as bombs, grenades and mines, comprising:

a transport container capable of being carried by the aircraft in a stationary position relative to said aircraft;

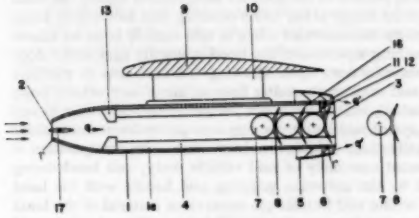
said transport container having a substantially cylindrical configuration which defines a lengthwise axis, a front end and a rear end;

a plurality of substantially spherical objects having a favorable ratio of object mass to unit resistance;

said objects being arranged in said transport container in a stacked configuration in the direction of said lengthwise axis;

a plurality of guide rails for guiding said objects for movement through said transport container in the direction of said lengthwise axis;

drag stabilizing means mounted at said objects;



means for applying to said plurality of objects mounted internally of said transport container, at least during one time interval prior to dropping said objects in series and at least partially and directly at the series of objects, a flight-pressure head of said aircraft;

said drag stabilizing means comprising brake guide means provided at each one of said objects;

three of said guide rails being mounted in an angularly spaced relationship at an inner wall of said transport container;

said brake guide means possessing a substantially plate-shaped configuration and having recess means for the through-passage of said guide rails;

one of said guide rails defining at least a lower guide rail; and

each one of said objects bearing under the action of its weight upon two points at least at said lower guide rail.

4,424,734

PROTECTING COVER FOR A GUN BARREL

Karl-Egon Janssen, Meerbusch, and Heinz-Guenter Breuer, Duisburg, both of Fed. Rep. of Germany, assignors to Heinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 223,945

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005117

Int. Cl.³ F41F *17/08*

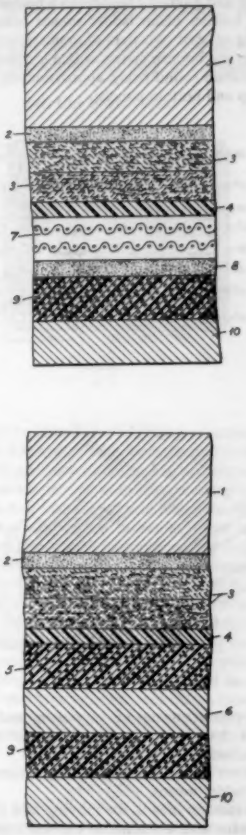
U.S. Cl. 89—16 **11 Claims**

1. A pipe-shaped composite protective cover to a gun barrel mounted over the outer periphery of the gun barrel, comprising in combination,

a first heat-insulating layer consisting of loose material having a low specific gravity which first layer is elastically supported around the outer surface of the gun barrel;

a second heat-conducting layer firmly mounted on said first layer by means of a foamed on layer of silicone foam mounted on said first layer; and

at least one additional heat-insulating layer followed by at least one additional heat-conducting layer mounted in that order on said second layer;



said protective cover being firmly mounted on said gun barrel without intermediate air gaps between the cover and the gun barrel surface.

4,424,735

LINEAR LINKLESS AMMUNITION MAGAZINE

Lawrence D. Bacon, Santa Ana, and Michael D. Golden, Costa Mesa, both of Calif., assignors to Western Design Corporation, Irvine, Calif.

Filed May 15, 1981, Ser. No. 263,994

Int. Cl.³ F41D *10/22*

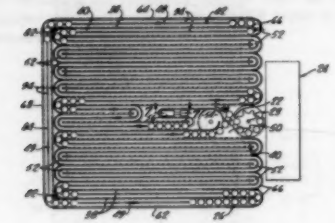
U.S. Cl. 89—34 **15 Claims**

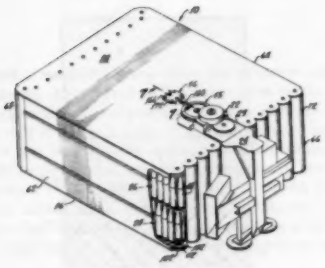
1. An ammunition magazine for the storage of ammunition rounds comprising:

(a) a top and a bottom panel held in a spaced apart relationship by a plurality of continuous approximately parallel partitions disposed therebetween, said partitions forming storage and guiding channels for ammunition rounds, said channels extending from said top to said bottom panel said storage and guiding channels being open from said top to said bottom panel and sized to enable passage of at least two tiers of ammunition rounds therethrough with a longitudinal axis of each ammunition round being approximately perpendicular to the top and bottom panels;

(b) a single endless chain ladder means disposed within the storage and guiding channels for supporting said ammuni-

tion rounds in a spaced apart relationship with each other and for transporting said ammunition rounds within said storage and guiding channels to a magazine exit port, said single endless chain ladder means being configured for holding at least two tiers of ammunition rounds between the top and bottom panels with a longitudinal axis of each ammunition round being approximately perpendicular to the top and bottom panels;





(c) idler sprocket means for supporting and transporting the endless chain ladder means within said storage and guiding channels;

(d) tensioner means for controlling tension in said endless chain ladder means; and,

(e) drive spocket means, for moving said endless chain ladder means and ammunition carried thereby within said storage and guiding channels to said magazine exit port.

4,424,736

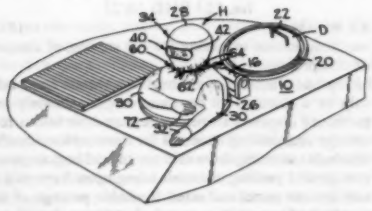
VEHICLE CREWMAN'S HOOD

Andrew T. Byrne, Waterloo, Belgium, assignor to FMC Corporation, Chicago, Ill.

Filed Aug. 27, 1981, Ser. No. 296,671

Int. Cl.³ F41H *1/00*; A62B *17/00*

U.S. Cl. 89—36 D **2 Claims**



1. In combination, a mobile military vehicle having a body in which a crewman rides; means defining a flanged hatch opening in the upper portion of said vehicle body; a hatch door pivotally connected to said body for opening and closing said hatch opening; a handle on said door; and means defining a collapsible crewman's shelter of the type having means for mounting the shelter around the flanged hatch opening of the military vehicle; means in said shelter for receiving the upper portion of a crewman's body and a forward vision plate; said shelter being shaped as a hood; said hood being formed of flexible gas impervious sheet material, said material being formed to provide a crewman's shoulder, arm, hand and head receiving portions; said vision plate being in said head-receiving portion and means for connecting said head-receiving portion to a crewman's head for moving said head-receiving portion and the vision plate in response to movement of the crewman's head, said mounting means comprising a hatch flange encircling band around the lower edge of the shoulder-receiving portion of the hood for hermetically sealing the hood around the flange at the hatch opening; said hatch door being opened by the crewman while in said vehicle body by manually pushing a portion of the hood upwardly against the door to pivot said door open allowing the crewman to partially enter said crewman's shelter from inside of said vehicle body and partially extend the upper portion of his body when in said hood out of said hatch opening into the ambient atmosphere externally of the vehicle for observation or for manipulation of equipment externally of said vehicle body; said hatch being closed by the crewman gripping said handle with his hand while within said flexible gas impervious material of the hood with a major portion of the hood being collapsed within said hatch opening and a minor portion of said hood being compressed between said closed door and the upper surface of said hatch flange for providing a secondary hermetic seal in the event the seal around said flange should be damaged by gun fire or the like.

4,424,737

STROKE CUSHIONING APPARATUS FOR HYDRAULIC CYLINDERS

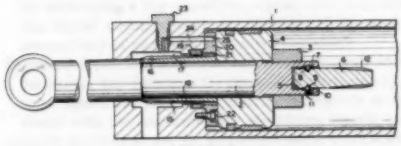
Hisashi Endo, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 20, 1981, Ser. No. 245,963

Claims priority, application Japan, Mar. 26, 1980, 55-38721[U]; Mar. 26, 1980, 55-38722[U]

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—396 **3 Claims**



1. A stroke cushioning apparatus for a hydraulic cylinder, comprising:

a housing;

a piston assembly slideably mounted within said housing and having a head side stroke end and a rod side stroke end, said piston assembly including a rod and a piston mounted on said rod and defining at least one fluid chamber in said housing;

a sleeve fixedly mounted on said rod;

a first axial passage formed in said housing at one end thereof, said first axial passage being communicated with the fluid chamber and outside of said housing and adapted to accommodate said sleeve therein when said piston assembly is moved to its rod side stroke end;

a land formed in said housing within said first axial passage;

a stopper plate fixedly mounted to said housing;

a cushion ring mounted to said housing between said land and said stopper plate, said cushion ring being allowed to move slightly in an axial direction and the inner diameter

of which is made larger than the outer diameter of said sleeve;

a plunger mounted to said rod, a base end of said plunger being inserted in a blind hole formed in said rod at said head end side thereof;

means for mounting said plunger to said rod with allowing slight movements of said plunger both axially and radially comprising a plurality of balls accomodated in a pair of annular grooves, one formed in each of said plunger and said rod, respectively, and being registered with each other; and

a second axial passage formed in said housing at the opposite end of said first axial passage, said second axial passage being communicated with the fluid chamber and outside of said housing and adapted to accommodate said plunger therein when said piston assembly is moved to its head side stroke end, the diameter of said second passage being made slightly larger than that of said plunger;

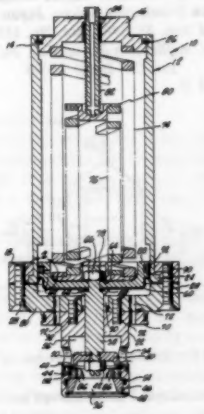
whereby flow of fluid is restricted between said sleeve and said cushion ring when said piston assembly is moved to its rod side stroke end and also flow of fluid is restricted between said plunger and wall of said second passage when said piston assembly is moved to its head side stroke end.

4,424,738

FLUID CONTROLLER WITH DIAPHRAGM AND PISTON

Francis Leighton, Woodland Hills, Calif., assignor to Air-Dry Corporation, Northridge, Calif.

Filed Nov. 6, 1981, Ser. No. 319,089
Int. Cl.³ F15B *11/08*
U.S. Cl. 91—422 **14 Claims**



1. A fluid flow controller comprising:

(a) a casing having a longitudinal axis, a fluid inlet and a fluid outlet;

(b) a diaphragm within the casing and means providing fluid communication between the fluid and the diaphragm;

(c) a retainer for the diaphragm, the retainer being axially moveable within the casing in response to fluid pressure on the diaphragm;

(d) means for biasing the retainer against said axial movement; and

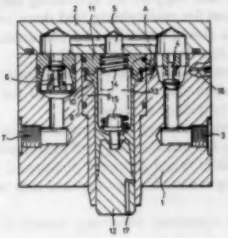
(e) sealing means providing fluid-tight engagement between the casing and the retainer so that if the diaphragm ruptures, substantially no fluid can bypass the retainer and the flow controller continues to function.

4,424,739

CYLINDER PISTON UNIT

Reiner Hovorka, Röttgen 130, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 138,904
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914694
Int. Cl.³ F01B *19/00*
U.S. Cl. 92—105 **5 Claims**



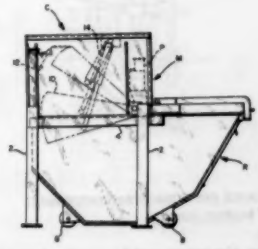
1. A cylinder-and-piston unit comprising a housing, a cylindrical bore in said housing, a hose-retaining ring in said bore, a sleeve in said bore, an elastomeric hose in said sleeve, a reciprocally-movable piston in said sleeve, connecting means connecting the piston to a first part of said hose whereby reciprocating movement of said piston causes the hose to be alternately stretched and contracted longitudinally, a flange formed externally on a second part of said hose, a correspondingly-shaped recessed part in said sleeve to receive said flange and to clamp the hose flange between said sleeve and said hose-retaining ring whereby the longitudinal region of said hose adjacent said flange undergoes substantially no stretching and contraction during reciprocating movements of said piston, a longitudinally-extending annular gap between said recessed part of said sleeve and said hose adjacent said flange thereon, and a lubricant-supply duct in said housing leading to said gap for the supply of lubricant thereto.

4,424,740

COMPACTOR SAFETY INTERLOCK MECHANISM

Kenneth W. Gwathney, and George K. Carpenter, both of Vernon, Ala., assignors to Marathon Equipment Company, Vernon, Ala.

Filed Dec. 10, 1981, Ser. No. 329,337
Int. Cl.³ B30B *15/16*
U.S. Cl. 100—52 **17 Claims**



1. A compactor safety interlock mechanism including:

(a) a support;

(b) said support including trash container receiving means and a compactor mechanism;

(c) said compactor mechanism including a door opening for receiving trash and a door for said door opening;

(d) outlet means in said compactor mechanism for dispensing trash into a trash container when trash is put into said door opening;

(e) ram means in said compactor mechanism, having up, down, and intermediate positions and movable from said compactor mechanism from above said door opening past said door and into a trash container when positioned in said support;

(f) interlock means associated with said support responsive to a trash container when a trash container is in proper position in said support for activating said ram;

(g) latch means for maintaining said door locked when said ram is in a down position and for unlocking said door when said ram is in said up position;

(h) control means associated with said door for deactivating said ram when said door is open and for activating said ram when said door is closed;

(i) means interconnecting said control means with said interlock means for maintaining said ram deactivated when a trash container is not properly positioned in said support;

(j) ram moving means for moving said ram when said ram is activated;

(k) said trash container receiving means including a front and a rear;

(l) said interlock means being mounted at said rear of said trash container receiving means;

(m) said interlock means including movable cam means operable by a trash container when in proper position;

(n) switch means associated with said cam means engageable by said cam means when said cam means is moved;

(o) said switch means including take up means to prevent damage to said switch means by over travel of said cam means; and,

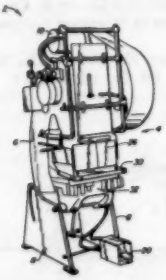
(p) whereby when a trash container is in proper position in said support and said door is latched, said ram is activated and said ram will move from up to down position compacting trash in said trash container upon operation of said ram moving means.

4,424,741

PRESS MACHINE SAFETY APPARATUS

Jon P. Moldestad, 1015 Cadillac Way, Burlingame, Calif. 94010

Filed Nov. 18, 1981, Ser. No. 322,324
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—53 **13 Claims**



1. An improved press machine comprising:

a source of kinetic energy;

a lower die;

an upper die, the upper and lower dies being aligned with one another in a die area;

a drive train coupling said source of kinetic energy with said upper die, said drive train including a clutch and at least one removable element between said clutch and said upper die, the removable element being movable between a position in the drive train and a removed position out of the drive train, and the removable element being separate from the upper and lower dies so that movement of the removable element between the position in the drive train and the removed position does not cause movement of the upper die and the lower die; wherein when the removable element is positioned in the drive train kinetic energy can be transmitted from the clutch through the movable element to the upper die to drive the upper die downward toward the lower die, and wherein when the removable element is in the removed position out of the drive train kinetic energy cannot be transmitted from the clutch to the upper die due to an absence of the removable element from the drive train;

movable barrier means for alternatively blocking and permitting user access to said upper and lower dies in the die area; and

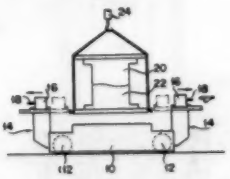
means, operably coupled to said movable barrier means, for selectively removing said removable element of said drive train from said drive train to the removed position while leaving the upper and lower dies in the die area to operably isolate said source of kinetic energy from said upper die when said movable barrier means permits user access to said upper die.

4,424,742

SHIFTING APPARATUS FOR A TRANSFER BAR OF A TRANSFER PRESS

Hisateru Yamashita, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,828
Claims priority, application Japan, Feb. 24, 1981, 56-24038
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—229 R **4 Claims**



1. An apparatus for shifting a transfer bar of a transfer press, comprising;

a moving bolster adapted to be moved into and out of said transfer press;

a frame mounted on said moving bolster;

a sliding member slidable horizontally on said frame between a first and a second position;

a transfer bar detachably mounted on said sliding member;

lever means pivotally mounted at one end thereof to said frame, said lever means having a roller rotatably mounted thereto at the other end thereof;

guide means mounted to said sliding member for guiding said roller in a vertical direction as said lever means pivotes on the one end thereof;

spring means having one end mounted to said frame and the other end mounted to the other end of said lever means; and

stopper means for effecting stoppage of said sliding member at said first and second positions.

4,424,743
PRINTING DEVICE OF TYPE RING SELECTION SYSTEM

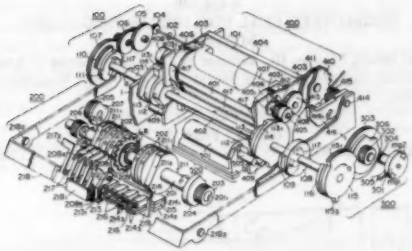
Kozo Okubo, Chichibu; Yoshihiro Kobata, Kawasaki; Osamu Asakura, Tokyo, and Tatsuo Nishikawa, Tachikawa, all of Japan, assignors to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 67,043, Aug. 16, 1979, abandoned. This application May 14, 1981, Ser. No. 263,488

Claims priority, application Japan, Aug. 19, 1978, 53-101349; Aug. 19, 1978, 53-101350; Aug. 19, 1978, 53-101351; Aug. 19, 1978, 53-101352; Aug. 19, 1978, 53-101353; Aug. 19, 1978, 53-101354; Oct. 27, 1978, 53-131477

Int. Cl.³ B41J *1/44*

U.S. Cl. 101—99 2 Claims



1. A printer comprising:

A type ring rotatably mounted on a first shaft and having a plurality of types arranged on the outer periphery thereof;

a ratchet wheel, rotatably mounted on said first shaft and provided on a side of said type ring, for selecting said plurality of types;

a type selection lever engageable with said ratchet wheel;

a leaf spring engaged with an end of said type selection lever;

electromagnetic means for attracting said leaf spring to cause said type selection lever to engage said ratchet wheel to prevent rotation of said type ring on said first shaft;

means for urging said leaf spring to increase the force applied by said leaf spring when one of said plurality of types to be printed in selected and said type ring having the one of said plurality of types is stopped by said type selection lever, said urging means including:

a urging cam fixed on a second shaft;

pressing cam fixed on said second shaft for pressing a platen to said plurality of types;

separation cam fixed on said second shaft for separating an ink roller from said plurality of types; and

a gear fixed on said second shaft for driving a signal generating unit which generates signals corresponding to each of said types and a signal for stopping a motor which rotates said second shaft, said urging cam, said separation cam and said gear being rotated by the rotation of said second shaft, whereby driving force is transmitted to all components provided in said printer through said cams and said gear.

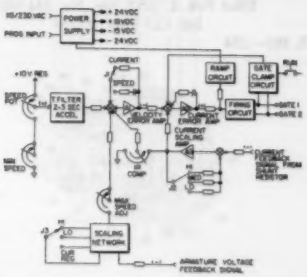
4,424,744
ADJUSTABLE DRIVE SYSTEM FOR MATCHING SURFACE SPEEDS OF A TRANSFER ROLL AND PLATE ROLL AND METHOD THEREOF

James R. Harper, Charlotte, and Charles L. O'Klatner, Denver, both of N.C., assignors to Harper Corporation of America, Charlotte, N.C.

Division of Ser. No. 371,721, Apr. 26, 1982. This application May 5, 1983, Ser. No. 491,996

Int. Cl.³ B41F *31/00*

U.S. Cl. 101—349 3 Claims



1. A method of flexographic printing comprising the steps of:

rotating an impression roll and an adjacent plate roll over a range from a low speed to a high speed;

contacting an ink roll with said plate roll to transfer ink therebetween;

measuring the rotational speed of said plate roll over said range and providing an output signal proportional thereto;

rotating said ink roll as a function of said output signal and proportional to the rotation of said plate roll as the radius of said plate roll is to the radius of said ink roll.

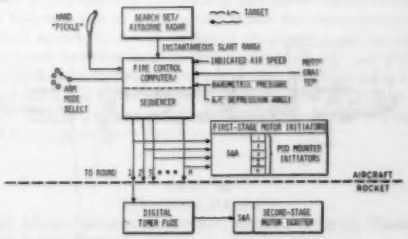
4,424,745
DIGITAL TIMER FUZE

William R. Magorian, China Lake, and Kenneth R. Wetzel, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1972, Ser. No. 238,709

Int. Cl.³ F42C *11/06, 13/06, 15/40*

U.S. Cl. 102—215 2 Claims



1. A digital timer fuze for a weapon comprising;

a clock circuit for providing a series of pulses at a stable frequency;

an up/down counter electrically connected to operate in its up counting mode for storing said clock circuit pulses and to operate in its down counting mode to count out the pulses stored;

logic means electrically connected to said up/down counter

and said clock circuit for controlling said up/down counter in either its up or down modes;

firing circuit means having a detonator and electrically connected to receive an electrical impulse from said up/down counter upon counting out of all pulses stored; and

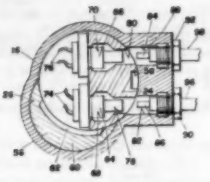
power supply means connected to said detonator for supplying energy to fire said detonator.

4,424,746

LEAD DETONATOR SHOCK ABSORBER

Christopher W. Bolieau, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Feb. 1, 1982, Ser. No. 344,848
Int. Cl.³ F42C *15/34*
U.S. Cl. 102—254 7 Claims



1. A barrier assembly for a safety and arming electroexplosive device comprising,

a housing having a generally cylindrical opening therein,

a rotor having a generally cylindrical surface positioned in said opening and rotatable between a safe position and an arm position, said rotor having at least a first recess provided therein and an associated first port leading from said recess to the circumference of said rotor,

a detonator positioned in each recess provided in said rotor,

said opening in said housing being formed to provide a crescent shaped space between the wall thereof and the surface of said rotor, and

a body of lead positioned in said space, said lead substantially but not entirely filling said space,

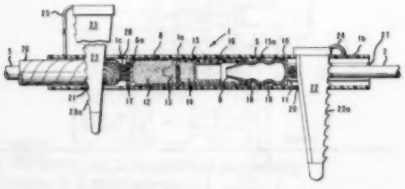
said first port being disposed adjacent said space and body of lead with said rotor in the safe position thereof.

4,424,747

NON-ELECTRIC BLASTING ASSEMBLY

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 27, 1981, Ser. No. 257,973
Int. Cl.³ C06C *5/00*
U.S. Cl. 102—275.2 29 Claims



1. A non-electric blasting assembly comprising:

(a) first and second lengths of low-energy detonating cord (LEDC) having an explosive core loading of about from 0.2 to 2 grams per meter of length;

(b) a precussion-actuated detonator comprising a tubular metal detonator shell integrally closed at an output end and closed at its other, input end by a partially empty, shorter tubular metal primer shell having an open end and supporting a percussion-sensitive primer charge adjacent the inside surface of an integrally closed end, said primer shell extending open end first into said detonator shell to dispose the outside surface of its primer charge end adjacent, and across, the end of said detonator shell, said detonator shell containing, in sequence from its integrally closed end, (1) a base charge of a detonating explosive composition and (2) a priming charge of a heat-sensitive detonating explosive composition;

(c) means for holding said first length of cord with a portion of its side adjacent the outside end surface of said primer shell, and for holding the apex of a substantially U-shaped segment of said second length of cord adjacent the integrally closed end of said detonator shell in a manner such that the two arms of the U extend away from said detonator in a direction substantially parallel to the longitudinal axis of said detonator shell; and

(d) means on said holding means for identifying the input and output ends of the detonator held thereby.

4,424,748

SEGMENTED SEAL FOR DISCARDING SABOT AMMUNITION

Saul Schiff, Moline, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1981, Ser. No. 290,898
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—523 1 Claim

1. A subcalibre projectile having a segmented seal between its core and sabot, said projectile comprising:

a subcalibre projectile core,

a discarding sabot having longitudinal petals encompassing said projectile core,

said sabot and core having annular recesses therein,

said seal fitting within said sabot and core recesses,

said seal being radially expandable upon radial movement of said petals upon projection through a worn gun tube,

said seal having a ring-like configuration formed from segmented interlocking sections having tongue and groove interfitting portions which interfit to form a ring whereby said seal is radially expandable without separation within said worn gun tube,

said seal having spider arms extending radially therefrom and between segments of said sabot.

4,424,749

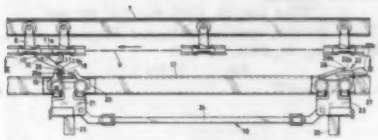
POWER-AND-FREE CONVEYOR

Takao Wakabayashi, Shinseari-Minamimachi, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed May 13, 1982, Ser. No. 377,906
Claims priority, application Japan, Feb. 10, 1982, 57/20063
Int. Cl.³ B61B *10/02;* B65G *17/00*
U.S. Cl. 104—172 S 5 Claims

1. In a power-and-free conveyor comprising first and second power lines arranged discontinuously, a free line coextensive with the two power lines therebelow through the power line discontinuous section, a multiplicity of pushers pivotally movable upward and downward and attached at a specified spacing to a drive chain on each of the power lines, a dog engageable with the pusher and mounted on each of a multiplicity of carriers on the free line, and a pusher raising cam mounted on

each of the carriers and having a dog receiving recess at its rear portion, the improvement comprising the pusher including a downward portion obliquely extending rearwardly downward and a horizontal portion provided at the lower end of the downward portion and extending laterally, the horizontal portion being formed with an upper pushing face and a lower pushing face on its front side and having a cavity in its bottom at the middle of the length thereof, the cam having a front lower portion, a rear higher portion having its top positioned at a level not lower than the top of the dog and a projection



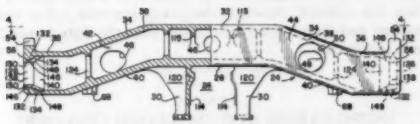
corresponding to the cavity and provided on the top of the front lower portion at the middle of its width, the free line having a carrier standby section coextensive with the first power line in the vicinity of the power line discontinuous section, the standby section having a larger length than the carrier and being laterally displaced from immediately below the first power line within a range permitting the horizontal portion of a pusher advancing from behind a carrier at rest in the standby section to interfere with the projection of the cam on the carrier at rest.

4,424,750

SINGLE WHEELSET RAILWAY TRUCK SIDEFRAME

Lynn K. Tilly, Allison Park, Pa., and Ernest C. Bergquist, Homewood, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 431,217
Int. Cl.³ B61D *3/00, 5/24, 5/44*
U.S. Cl. 105—206 R **2 Claims**



1. A side frame for use in a single axle railway truck, said side frame comprising

a top and a bottom wall joined by spaced inner and outer side walls to form a generally hollow cross section elongated structure, said side frame having an upper middle portion, two downwardly sloped intermediate portions and two lower outer portions,

the thickness of the bottom wall being substantially greater than the thickness of the top wall in the upper middle portion,

the thickness of the top wall being substantially the same as the thickness of the bottom wall in the two sloped intermediate portions and

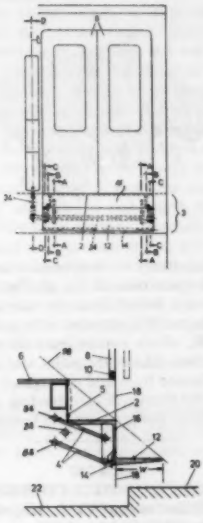
the thickness of the top wall being substantially the same as the thickness of the bottom wall in the two lower outer portions, such thickness being substantially less than the thickness of the top and bottom wall sloped intermediate portions.

4,424,751

ENTRY STAIRS FOR VEHICLES

Ernst Blöchlinger, Neuhausen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen, Switzerland

Filed Jan. 23, 1981, Ser. No. 227,880
Claims priority, application Switzerland, Jan. 28, 1980, 644/80
Int. Cl.³ B62D *23/02*
U.S. Cl. 105—447 **7 Claims**



1. Entry stairs for rail vehicles that are usable with rail platforms of varying height, said entry stairs including a first step and a second step below said first step, said first step when in an upper position being level with the floor of the vehicle and at that time said second step forming a part of the vertical side wall of the vehicle, said first step being mounted for movement from the upper position to a lower position for operation with relatively low rail platforms, said first step in moving between said upper and lower positions remaining generally horizontal, said second step being foldable between a generally vertical up position and a generally horizontal down position, a parallelogram-shaped pair of hinged guide brackets connected to said first step and guiding movement thereof so that said first step acts as a lifting step which executes essentially vertical motion only, a pivot means about which said second step moves between said up and down positions, said pivot means being firmly mounted on the vehicle and disposed at the lower end of the second step when it is in its said up position at which time said second step lies roughly in the plane of a side wall of a vehicle having said entry stairs.

4,424,752

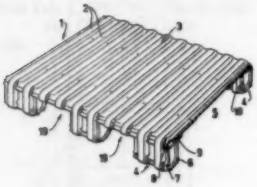
LOADING PALLET

Seard Aberg, Gammelstad, Sweden, assignor to Groko Maskin AB, Lulea, Sweden

PCT No. PCT/SE80/00267, § 371 Date Jun. 29, 1981, § 102(e) Date Jun. 29, 1981, PCT Pub. No. WO81/01279, PCT Pub. Date May 14, 1981
PCT Filed Oct. 30, 1980, Ser. No. 279,966
Claims priority, application Sweden, Oct. 30, 1979, 7908975
Int. Cl.³ B65D *19/28*
U.S. Cl. 108—51.1 **8 Claims**

1. A loading pallet having a load-carrying platform of corru-

gated sheet metal, characterized in that the platform (3) is supported at its opposed edges by supporting beams (4) of substantially U-shaped cross-section and extending perpendicularly to the corrugations (2), which beams are formed integral with the platform by bending the sheet three times substantially at right angle, so that its free end portions (10) form the inner surface of the respective supporting beam and constitute supporting legs for the platform spaced from the outer edges thereof, and said end portions (10) are locked relative to the



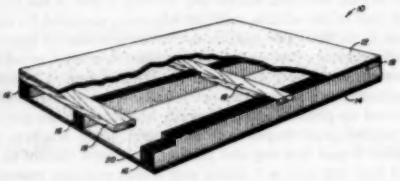
platform in a substantially vertical position and have between themselves a free space beneath the platform to permit insertion of the forks of a loader from one side or the other, and each supporting beam (4) is provided with spaced downwardly open recesses (19), which permit insertion of the forks of a loader also from these sides of the pallet, said platform and said beams being all formed from said corrugated sheet metal with a plurality of its full corrugations extending contiguously and integrally throughout the platform and beams.

4,424,753

PALLET OF COMPOSITE CONSTRUCTION

John R. Eatherton, Sacramento, Calif., assignor to Down River International, Inc., Sacramento, Calif.

Filed Aug. 5, 1982, Ser. No. 405,224
Int. Cl.³ B65D *19/34;* B32B *3/28*
U.S. Cl. 108—51.1 **3 Claims**



1. A composite pallet comprising:

at least two generally parallel runners, each having an upper surface and a lower surface, said runners being formed of a plurality of stacked plies of corrugated paperboard with the plies extending vertically between the upper and lower surface and each having at least two notches in its upper surface, the depth of said runners beneath said notches being sufficient to allow entry therebeneath of the forks of a forklift for lifting said pallet;

at least two stringers constructed of wood residing in the notches of said runners and extending transversely of the runners, the thickness of said stringers being substantially the same as the depth of said notches so that the upper surfaces of said stringers are substantially in the same plane as the upper surfaces of said runners and so that the upper surfaces of said runners and the upper surfaces of said stringers form a substantially flat grid for supporting an upper panel;

an upper panel of corrugated paperboard disposed on said grid formed by the upper surfaces of said runners and said stringers and being secured thereto; and

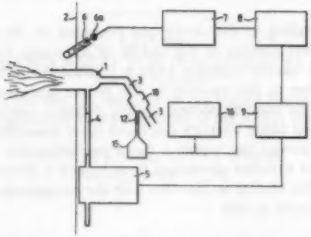
a lower panel of corrugated paperboard disposed on the lower surfaces of said runners and being secured thereto.

4,424,754

BURNER CONTROL

Colin R. Coleman, Kingston-upon-Thames; Joseph L. King, Renfrewshire, both of Great Britain, and William J. Bridges, Glasgow, Scotland, assignors to Babcock Power Limited, London, England

Filed Jun. 28, 1982, Ser. No. 392,696
Claims priority, application United Kingdom, Jul. 1, 1981, 8120335; Aug. 21, 1981, 8125677
Int. Cl.³ F23N *5/02*
U.S. Cl. 110—190 **9 Claims**



1. Means for use in controlling the operation of a burner that is supplied with a mixture of pulverized fuel and air, comprising means responsive to the flame temperature and arranged to produce a signal of which a value is dependent upon the flame temperature, means to indicate when the value corresponds to a predetermined flame temperature, means whereby the flow of fuel to the burner may be disturbed from a current rate so that its rate is first above or below the current rate and then below or above the current rate with the result that the value passes through a predetermined value corresponding to the predetermined flame temperature, and means by which the rate at which air or fuel is supplied to the burner may be altered according to whether or not the predetermined value is reached before or after a predetermined time after the disturbance has been instigated in the sense that would tend to reduce the interval between the predetermined value being reached and the predetermined time after the disturbance has been instigated.

4,424,755

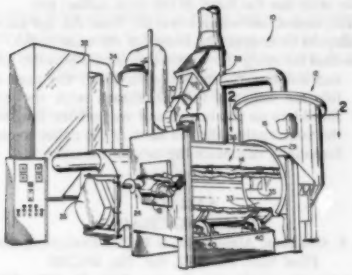
INCINERATION SYSTEM HAVING CYCLONIC OXIDATION CHAMBER

Allan E. Caffyn, South Windsor, Conn., and James L. Lobik, Springfield, Mass., assignors to Industronics, Inc., South Windsor, Conn.

Filed Sep. 30, 1982, Ser. No. 429,052
Int. Cl.³ F23G *5/06*
U.S. Cl. 110—246 **14 Claims**

1. In an incineration system having means defining a primary oxidation chamber for receiving material to be incinerated, and means defining an axially elongated secondary oxidation chamber for receiving gaseous products of combustion from said primary oxidation chamber and having an inlet port in communication with said primary oxidation chamber, an exhaust port, and a plurality of walls cooperating to define a torturous flow path for gaseous products of combustion flowing from said primary oxidation chamber into and through said secondary oxidation chamber to said exhaust port, the improvement wherein said secondary oxidation chamber comprises a cyclonic chamber and said walls comprise a plurality of generally annular walls including a first annular wall defining said ex-

haust port and extending for some distance in an axial direction into said secondary chamber to define one portion of said gas flow path and terminating at a first inlet opening within said secondary oxidation chamber axially spaced from said exhaust port and a second annular wall surrounding at least a portion of said first annular wall and cooperating with said first annular



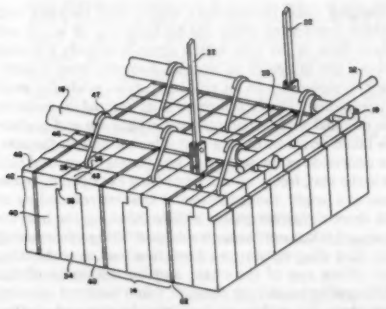
wall to define another portion of said gas flow path in communication with said first inlet opening, said second annular wall having an inlet opening therein spaced from said first inlet opening in the direction of said exhaust port and in communication with said inlet port and said other portion of said gas flow path.

4,424,756

SUSPENDED ROOF CONSTRUCTION FOR INDUSTRIAL FURNACES

Frank P. Merkle, Hanover, Ill., assignor to Merkle Engineers, Inc., Galena, Ill.

Filed Feb. 1, 1982, Ser. No. 344,515
Int. Cl.³ F23M *5/06*
U.S. Cl. 110—332 **19 Claims**



1. In suspended roof construction for high temperature furnaces having a plurality of roof panel modules suspended from a structural support frame, each said panel module comprising: at least two spaced hanger tubes extending the length of one dimension of said panel module; a plurality of roof assembly units independently suspended from said hanger tubes, each said roof assembly units comprising; two refractory carrier bricks of a generally rectangular configuration, each of said carrier bricks having a first and a third opposing side and a second and fourth opposing side, said first side having a blind hanger recess extending into said brick for a portion of its thickness for engagement with a hanger capable of suspending said carrier bricks, said first side of one of said carrier bricks adjacent to and in communication with said first side of the second said carrier brick, said carrier bricks further comprising shoulder means extending from the upper portion of at least one of said second and fourth sides; at least one refractory filler brick having a generally rectangular configuration and a supporting lug on the upper portion of one side thereof engaged with said shoulder means, the entire top surfaces of said carrier bricks and said filler bricks being in a substantially flat, common plane; and a hanger in engagement with said hanger recesses of said carrier bricks at one end and in engagement with one of said hanger tubes at the other end.

9. In suspended roof construction for high temperature furnaces, a plurality of roof assembly units, each said roof assembly units comprising:

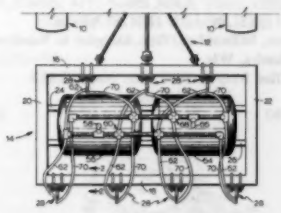
two refractory carrier bricks of a generally rectangular configuration, each of said carrier bricks having a first and a third opposing side and a second and fourth opposing side, said first side having a blind hanger recess extending into said brick for a portion of its thickness for engagement with a hanger capable of suspending said carrier bricks, said first side of one of said carrier bricks adjacent to and in communication with said first side of the second said carrier brick, said carrier bricks further comprising shoulder means extending from the upper portion of at least one of said second and fourth sides; at least one refractory filler brick having a generally rectangular configuration and a supporting lug on the upper portion of one face thereof engaged with said shoulder means, the entire top surfaces of said carrier bricks and said filler bricks being in a substantially flat, common plane; and a hanger in engagement with said hanger recesses of said adjacent carrier bricks.

4,424,757

FERTILIZING METHOD AND APPLICATOR FOR CONCURRENTLY INTRODUCING ANHYDROUS AMMONIA AND A PHOSPHORIC ACID INTO A FURROW

James R. Gibbens, R.R. #1, Cando, N. Dak. 58324

Filed Oct. 5, 1981, Ser. No. 308,618
Int. Cl.³ A01C *23/00*
U.S. Cl. 111—7 **3 Claims**



1. In combination, a first tank containing a supply of anhydrous ammonia, a second tank containing a supply of phosphoric acid, a single blade member having a narrow forward cutting edge and a wider rear edge, a first tube communicatively connected directly to only said first tank and mechanically secured to said blade adjacent said rear edge having a lower open end for discharging anhydrous ammonia from said first tank into the furrow formed by said blade member as said blade member advances through the soil to be fertilized, a second tube communicatively connected directly to only said second tank and mechanically secured to said first tube behind said first tube having a lower open end for discharging phosphoric acid from said second tank into the furrow rearwardly of said first tube, the lower end of said first tube being at an elevation slightly below the elevation of the lower end of said second tube, and a shoe member secured to the lower end of said blade member and extending rearwardly to a location beneath only the lower end of said first tube.

4,424,758
EMBROIDERING APPARATUS FOR USE WITH SEWING MACHINES

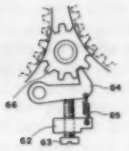
Yoshio Mikuni; Tadao Kohara, both of Osaka, and Yoshihide Yoneda, Hirakata, all of Japan, assignors to Maruzen Sewing Machine Company, Osaka, Japan

Filed Nov. 20, 1981, Ser. No. 323,454

Claims priority, application Japan, Jun. 16, 1981, 56-89206[U]; Jun. 16, 1981, 56-89207[U]; Jun. 16, 1981, 56-89208[U]; Jun. 16, 1981, 56-89209[U]; Jun. 16, 1981, 56-93517; Jun. 16, 1981, 56-93518

Int. Cl.³ D05C *9/04*

U.S. Cl. 112—103 **37 Claims**



1. An embroidering apparatus for use with a sewing machine having a needle provided at a predetermined position, comprising:

a table movably supported in a plane including at least two intersecting directions on which an original pattern is to be placed,

an embroidery frame associated with and movable in the direction of the movement of said table responsively thereto, and

a tracing needle having the tip end thereof positioned at a fixed position and said tip end oriented to said original pattern on said table,

moving means for simultaneously moving said embroidery frame and said table, and

stopper means for selectively prohibiting movement by said moving means in one of the two intersecting directions.

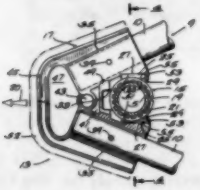
4,424,759
SAILBOARD GOOSENECK

Dale M. Dolence, Milwaukee, Wis., assignor to Neodyne Corporation, Waukesha, Wis.

Filed May 9, 1983, Ser. No. 492,915

Int. Cl.³ B63H *9/10*

U.S. Cl. 114—97 **15 Claims**



1. A gooseneck for rigidly and detachably attaching the boom to the mast of a wind-powered vehicle, comprising:

a. A mast collar including:

i. A generally tubular member;

ii. A pair of bosses extending laterally from the tubular member and having generally arcuate after facing shoulders and upwardly or downwardly convergent flat faces; and

iii. A fulcrum fastened to the outer periphery of the tubular member intermediate the two bosses; and

b. A mast yoke including:

i. A pair of stern facing boom receiving receptacles;

ii. Gusset means for joining the forward ends of the boom receptacles;

iii. Connecting means for rotatable engagement with the fulcrum of the mast collar;

iv. A pair of inwardly facing upwardly or downwardly converging flat faces fastened to the inner portions of the boom receiving receptacles and adapted to cooperate with the flat faces of the mast collar; and

v. Tab means extending inwardly from the flat faces and adapted to engage the bosses of the mast collar,

so that inserting the connecting means into the fulcrum and rotating the boom yoke about the mast collar fulcrum engages the tab means with the arcuate shoulders on the bosses and wedges the flat faces of the yoke against the flat faces of the collar to circumferentially compress the tubular member.

4,424,760
HANGING CHAIR

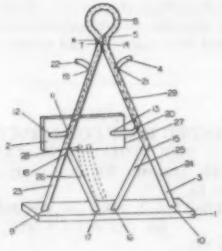
Fredrik A. Grufman, Alvägen 61, S-182 45 Enebyberg, Sweden

Filed Mar. 10, 1982, Ser. No. 356,793

Claims priority, application Sweden, Mar. 26, 1981, 8101944

Int. Cl.³ B63B *29/04*

U.S. Cl. 114—363 **1 Claim**



1. A hanging chair (boatswain's chair) with backrest and crotch straps, comprising a seat and backrest, e.g. of wood and a continuous hose of the type which expands radially for axial compression, and increases its internal diameter from a nominal value corresponding to an unloaded state, while for axial pull it is contracted radially and reduces its internal diameter to under the nominal value, characterized in that one end portion of hose is taken down through a first side seat hole in the seat, along the underside of the seat up to and through a second side seat hole in the seat, freely up to a first lifting eye opening made in the hose at a height above the seat at least corresponding to the width thereof, further pulled a distance along the interior of the hose and taken out through a second lifting eye opening and into a first sling opening to form first and second lifting slings and lifting eye of the chair, and on the inside of the second lifting sling to and out through a first backrest opening approximately at the middle of the sling, the one end portion being further taken through a first hole in the backrest, along the back of it and out through a second hole in the backrest, in that the other end portion of the hose is taken through a second sling opening at the lifting eye, along the inside of the first lifting sling to and through a first strap opening below the middle of the first lifting sling down to and through a first central hole in the seat, along the inside of the hose between said first and second side seat holes in the seat outer edges for a length of at least twice the hose diameter, up through a second central hole in the seat to and through a second strap opening on the second lifting sling at the same height as the first strap opening on the first lifting sling and thus forming seat crotch straps, said other end portion follows the interior of the hose as far as, and out through a strap adjustment opening under the lifting eye and forming an adjusting strap for the crotch straps, and in that the first end portion is taken through

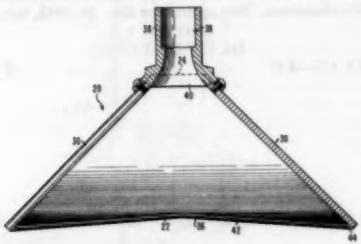
a second backrest opening of the second lifting sling at the same height as that of the first backrest opening, along the interior of the hose and out through a backrest adjustment opening at the same height as the strap adjustment opening to form a backrest with adjustment facility.

4,424,761

NOZZLE FOR COATING A DISC WITH A LUBRICANT

Joseph H. Thorn, and Robert E. Jennings, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,590
Int. Cl.³ B05B *1/28*
U.S. Cl. 118—300 **9 Claims**



5. In an apparatus for coating a disc with a thin film of a lubricant which includes a horizontally extending conveyor, means on said conveyor for supporting a disc in a horizontal position and a nozzle mounted over said conveyor for directing a flow of lubricant droplets vertically downwardly onto the surface of a disc as the disc passes beneath the nozzle, the improvement comprising:

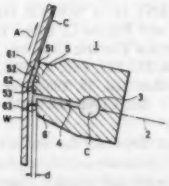
said nozzle including a pair of side plates each having spaced top and bottom edges with the bottom edges being wider than the top edge, said side plates being connected together in spaced relation to form an enclosure having a narrow discharge opening along the bottom edges of the side plates, an inlet port at the top edge of the side plates and a groove in and extending along the inner surface of each of the side platets adjacent the bottom edges to collect any lubricant which may flow down the inner surfaces of the side plate toward the discharge opening each of the grooves extending along the full width of its respective side plate and at each side edge of the side plate extending downwardly to the bottom edge of the side plate.

4,424,762

COATING APPARATUS

Yasunori Tanaka; Shinji Noda, and Hiroshi Chikamasa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigari, Japan

Filed Nov. 10, 1981, Ser. No. 320,034
Claims priority, application Japan, Nov. 13, 1980, 55/159899
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—410 **14 Claims**



1. An extrusion type coating apparatus for continuously extruding a coating solution out of an open end of a slot which is set close to a surface of a belt-shaped flexible support running continuously along a predetermined running path in order to apply said coating solution to the surface of said support, comprising:

a doctor edge adjacent to said slot for metering a desired thickness of said coating solution applied to said support;

said doctor edge having adjacent flat doctor surfaces bent relative to one another along a first edge extending in a widthwise direction of said support, said adjacent doctor surfaces forming an obtuse angle at said first edge which is sufficiently large to enable said running path of said belt-shaped flexible support to be parallel to both said adjacent doctor surfaces, said running path of said belt-shaped flexible support changing direction in a vicinity of said first edge;

said obtuse angle being at least 165°, one of said two adjacent doctor surfaces which is on a downstream side of said support having a length of 1 mm to 15 mm, while the other adjacent doctor surface which is on the upstream side of said support has a length of 0.1 mm to 2 mm.

4,424,763

CITRUS PULP LITTER FOR PET ANIMALS

Robert M. Johnson, Weston, Conn., assignor to Green Mountain Products, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 376,584, May 10, 1982, Pat. No. 4,386,580. This application Mar. 3, 1983, Ser. No. 471,660
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **2 Claims**

1. Animal litter comprising:

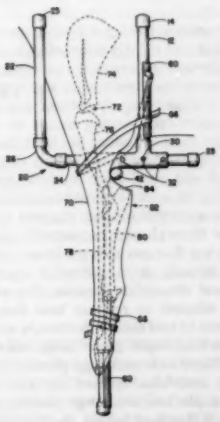
a mixture of dried citrus pulp particles having approximately 80% to 90% by weight of bits of a size between approximately ⅛ to ¾ inch on each side thereof for adhering to and coating animal solid waste, and the remainder fines of a size of less than ⅛ inch on each side thereof for absorbing animal urine.

4,424,764

ANIMAL SPLINT

Milton O. Carlin, 4115 South Zunis, Tulsa, Okla. 74105

Filed Sep. 9, 1982, Ser. No. 416,111
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—96 **5 Claims**



1. A limb splint for restraining movement of an animal's limb which includes a shoulder and elbow comprising:

a tubular horizontal frame;

a first vertical member fixed to said frame adjacent one end and extending upwardly therefrom

a second vertical member fixed to said frame adjacent the other end and extending downwardly therefrom

a third member formed of a vertical and a horizontal part, the vertical part substantially parallel to said first vertical member, said horizontal part telescopically movable and fixable within said tubular frame to restrain movement of said shoulder;

said frame, said first, and second vertical members and said third member, all lying in the same imaginary vertical plane;

a horizontal fourth member positioned adjacent to the intersection of said second vertical member and said frame so as to be movable relative said frame in an inward or outward direction that is transverse to said vertical plane, and

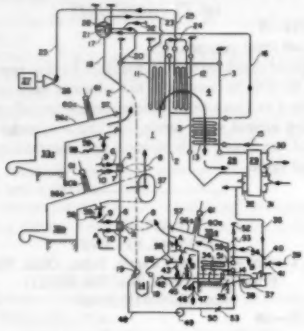
means to strap said animal limb to said splint whereby said fourth member is located above the said elbow of said animals.

4,424,765

STEAM GENERATOR HAVING EXTERNAL FLUIDIZED BED COMBUSTION MEANS

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.

Filed Apr. 26, 1982, Ser. No. 371,528
Int. Cl.³ B09B *3/00*
U.S. Cl. 122—4 D 5 Claims



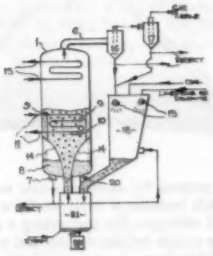
1. A steam generator having a feedwater inlet and superheated steam outlet and serially connected, coolant containing heat absorption circuits in-between, a multiplicity of detached fluidized bed combustors structurally and spacially set apart, the combustion process being completed within said combustors, said combustors each having means to control internal rate of combustion and to produce hot inert flue gas flow, first portion/s of said heat absorption circuits being disposed for in-bed cooling of said combustor fluidized beds, an integral encasement, said combustors external to said encasement, said encasement compartmentalized into discrete circuits for guiding flue gas flow through said encasement, said discrete circuits each receiving flue gas effluent from only a portion of said combustors directly through conduit means, second portion/s of said heat absorption circuits disposed within said encasement and adapted to recover heat from said flue gas flow, first segments of said second portion/s wherein the coolant is in the superheat vapor phase range, said first segments consisting of multiple heat exchange platens, coolant flowing serially through individual platen circuits and parallelly through said multiple heat exchange platens, said platens of said first segments disposed within the hot inlet end of said discrete circuits and distributed so that more heat exchange surface of one of said first segments is located in one of said discrete circuits than is located in another of said discrete circuits, said distribution of said platens for individual first segments between/among said discrete circuits providing the means for control of heat input distribution to said second portion/s of said serially connected heat absorption circuits in conjunction with selective setting of said rate of combustion for said combustors associated with individual elements of said discrete circuits.

4,424,766

HYDRO/PRESSURIZED FLUIDIZED BED COMBUSTOR

Bede A. Boyle, P.O. Box 713K, Newcastle, N.S.W. 2300, Australia

Continuation-in-part of Ser. No. 416,166, Sep. 9, 1982, abandoned, which is a continuation of Ser. No. 234,469, Feb. 17, 1981, abandoned. This application Jan. 28, 1983, Ser. No. 461,919
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—4 D 9 Claims



1. A hydro/pressurized fluidized bed combustor comprising:

an upstanding shell having, at the bottom thereof, an entry port for the low velocity entry of feedstock to said combustor, said feedstock including particulate solid material, air and water;

an injector pump connected to said entry port for admission of said feedstock;

an upstanding, contoured entry conduit, having a trumpet-shaped catenoid vertical cross-section gradually enlarging in the upward direction, said conduit being accomodated within the lower half of said upstanding shell and being in communication with said entry port;

a fluidized bed in the upper portion of said entry conduit, for combustion of said feedstock;

at least one in-bed steam generation tube located within said combustion zone;

at least one freeboard steam generation tube located above said combustion zone; and

a weir located above said entry conduit and in communication therewith, said weir acting to extract ash from said fluidized bed at a rate which keeps the height of said bed constant within said combustor during operation thereof.

4,424,767

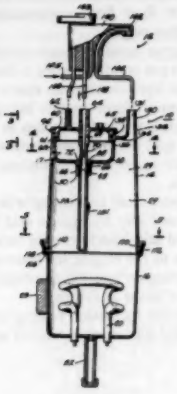
INSTANT HOT WATER HEATER

Charles A. Wicke, and Wayne C. Riley, both of Racine, Wis., assignors to Emerson Electric Company, St. Louis, Mo.

Division of Ser. No. 233,221, Feb. 9, 1981, Pat. No. 4,391,459. This application Sep. 25, 1982, Ser. No. 421,633
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—13 A 2 Claims

1. In a hot water dispenser having wall means defining a heating chamber, a non-concentric cylindrical wall portion formed integrally with the heating chamber and defining a heated water expansion chamber, wall means defining a partition separating said heating chamber and said expansion chamber, and a cover for the expansion chamber including inte-

grally molded vent and inlet tubes, said inlet tubes including a stem projecting downwardly therefrom and interfitting in a



neck in said partition, said stem carrying an O-ring seal which sealingly interfits in said neck.

4,424,768

HIGH TURBULENCE BOILER

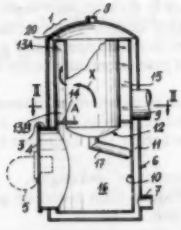
Luigi Testa, 17014 Cairo Montenotte, Via XXV Aprile, 14, Savona, Italy

Continuation-in-part of Ser. No. 144,541, Apr. 28, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,482

Claims priority, application Italy, May 8, 1979, 12584 A/79; Nov. 2, 1979, 27012 A/79

Int. Cl.³ F22B *5/00*

U.S. Cl. 122—16 **15 Claims**



1. A boiler, comprising:

an inner shell having a substantially vertical side wall and wherein a lower portion of said inner shell constitutes a combustion chamber;

an open-top vessel member situated within an upper portion of said inner shell and adapted to receive a liquid to be heated, said vessel member having a bottom wall and a substantially vertical side wall which is spaced inwardly from an upper region of said inner shell side wall defining a substantially annular smoke sleeve therebetween;

an outer shell surrounding said inner shell and having a substantially vertical side wall which is spaced outwardly from said inner shell side wall to define a sleeve-like space therebetween constituting a water jacket which at least partially surrounds said combustion chamber and said smoke sleeve and which is in fluid communication with said vessel member;

a smoke discharge conduit passing through said outer shell and opening into said smoke sleeve at a discharge opening formed in said inner shell;

partition means situated in said smoke sleeve extending substantially vertically over the substantial height of said vessel member and between said side walls of said inner shell and vessel member, said partition means being located proximate to said smoke discharge opening;

whereby smoke produced in said combustion chamber during operation of said boiler passes directly into said smoke sleeve surrounding said vessel member and travels in a helicoidal path around said vessel member and exits from said smoke sleeve through said discharge opening.

4,424,769

PROCESS AND APPARATUS FOR REMOVAL OF THE SLUDGE DEPOSITS ON THE TUBE SHEET OF A STEAM GENERATOR

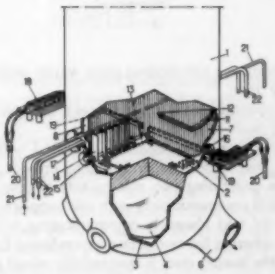
Andre G. Charamathieu, Gif sur Yvette, France; Jean Dessales, deceased, late of Gif-sur-Yvette, France; by Blanche A. Dessales nee Vacher, administratrix, Paris, and Bernard P. Leboue, Courbevoie, both of France, assignors to Framatome, Courbevoie and Societe de Travaux en Milieu Ionisant (S.T.M.I.), Gif-sur-Yvette, both of, France

Filed Oct. 6, 1982, Ser. No. 433,184

Claims priority, application France, Oct. 6, 1981, 81 18760

Int. Cl.³ F22B *37/52*

U.S. Cl. 122—392 **10 Claims**



1. A process for removal of the sludge deposits on the tube sheet of a steam generator which comprises, in a vertical cylindrical enclosure closed by said sheet, a bundle of parallel heat exchange tubes sealingly connected to said sheet and distributed to form parallel sheets of tubes, including the steps of:

radially moving at least one lance from the center of the tubular plate between two parallel sheets of tubes, in a direction parallel to the tube sheet and in close proximity to the latter,

directing toward the plate two streams of cleaning fluid under a high pressure from the end portion of the lance and in directions which are fixed and symmetrical with respect to the direction of said two sheets of tubes,

cutting off the streams as they confront the tubes during radial movement of the lance,

and flowing the cleaning fluid out of the enclosure of the steam generator from the periphery of the bundle of tubes.

4,424,770

LOW BOILING POINT MEDIUM EVAPORATOR

Haruyuki Yamazaki, Tokai; Yasuaki Akatsu, and Seiichiro Sakaguchi, both of Hitachi, all of Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,163

Claims priority, application Japan, Oct. 9, 1980, 55-140472

Int. Cl.³ F22B *37/26*; B01D *45/12*

U.S. Cl. 122—488 **1 Claim**

1. An apparatus for generating a low boiling point vapor

medium from a liquid mixture of two components with different boiling points which comprises,

a lower dram adapted to contain the two component liquid mixture and an upper dram,

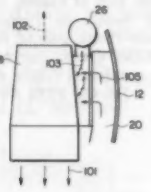
at least one down comer connecting the upper dram with the lower dram for returning the liquid mixture from the upper dram to the lower dram,

a header duct disposed within the upper dram,

a plurality of risers connecting the lower dram with the header duct in the upper dram,

means for heating the risers and the two component liquid mixture conveyed therethrough whereby a low boiling point vapor medium is generated from said two component liquid forming a two phase vapor-liquid mixture composed of a low boiling point vapor medium and the two phase vapor-liquid medium, said mixture being transferred from said risers to said header duct in the upper dram,

an exhaust conduit means connected to said upper dram for



removing the low boiling point vapor medium from said upper dram,

supply conduit means for returning the low boiling point liquid medium to the upper dram,

at least one cyclone separator disposed within the upper dram, said cyclone separator being provided with an inlet nozzle containing two side-by-side channels, one of said channels communicating with said supply conduit and the other of said channels communicating with the header duct, wherein the two phase vapor-liquid flow emanating from the header duct is tangentially mixed in the cyclone separator with the low boiling point liquid medium flow introduced through the supply conduit and heat exchange is carried out between the two flows by direct contact of the two flows resulting from the circulating motion of said two flows in the cyclone separator, whereby the temperature of the mixture in the cyclone separator is lowered without lowering the pressure and also the mixture in the cyclone separator is thoroughly mixed with the low boiling point liquid medium.

4,424,771

HYDRIDE COLD STARTER IN ALCOHOL FUEL TREATMENT AND DISTRIBUTION APPARATUS AND METHOD

Dale R. Lovercheck, Pittsburgh, Pa., assignor to Conoco Inc., Wilmington, Del.

Filed Aug. 23, 1982, Ser. No. 410,781

Int. Cl.³ F02M *27/02*

U.S. Cl. 123—3 **13 Claims**

1. A fuel treatment and distribution apparatus in combination with an internal combustion engine comprising

an internal combustion engine,

an alcohol storage means,

an electric current source means,

a dissociator means,

a hydride start-up reactor means, said hydride reactor means comprising hydride forming means and heating means connected to said electric current source means,

said alcohol storage means being connected by dissociator input conduit means in fluid flow communication with said dissociator means,

said dissociator means being connected by dissociator output conduit means in fluid flow communication with said internal combustion engine,

said dissociator output conduit means being connected by hydride reactor input conduit means in fluid flow communication with said hydride start-up reactor means,

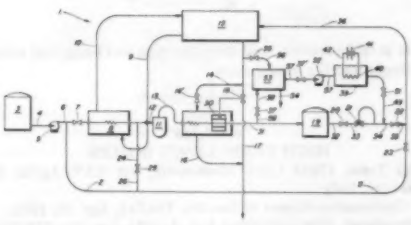
said hydride start-up reactor means being connected by hydride reactor output conduit means in fluid flow communication with said internal combustion engine,

said hydride reactor input conduit means being provided with valve means,

whereby alcohol dissociated to hydrogen in said dissociator means, being formed into hydride in said hydride start-up reactor means and said hydride being formed into hydrogen which passes to the engine for start-up.

4. A method of starting an internal combustion engine comprising the sequence of steps as follows:

(a) providing a hydride formation reactor means, vaporization means, alcohol dissociation reactor means and liquid alcohol,



said hydride formation reactor means comprising hydride forming means,

(b) operating said engine by combustion therein an operational gaseous mixture formed by:

(i) vaporizing a portion of said liquid alcohol in said vaporization means to form alcohol vapor,

(ii) dissociating said alcohol vapor in said dissociation reactor means to form said operational gaseous mixture, said operational gaseous mixture comprising hydrogen, and

(iii) contacting said hydride forming means with a portion of said operational gaseous mixture in said hydride reactor means whereby said hydrogen is formed into a hydride,

(c) stopping the operation of said engine,

(d) heating said hydride to form a start-up gaseous mixture comprising hydrogen,

(e) conveying said start-up gaseous mixture comprising hydrogen to said engine,

(f) starting said engine by combustion of said start-up gaseous mixture.

4,424,772

INTERNAL COMBUSTION ENGINE VALVE ACTUATING CAM

Gary N. Porter, 143 E. Hind Dr., Honolulu, Hi. 96821

Filed Nov. 3, 1981, Ser. No. 317,839

Int. Cl.³ F02D *39/04;* **F02B** *75/02, 33/10, 33/22*

U.S. Cl. 123—65 VB **8 Claims**

1. An internal combustion engine comprising

a crankcase block with at least one cylinder attached,

a cylinder head on said cylinder,

a reciprocating piston in said cylinder being operatively coupled to a crankshaft;

said crankshaft rotating in said crankcase with at least one throw having peripheral gears as a power take off means,

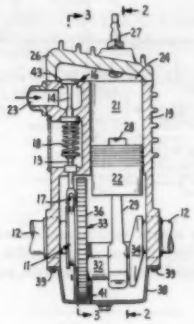
a lubrication means,

at least one cam affixed to the side of said crankshaft throw as a means of opening and closing at least one valve,

a trough in said crankcase whereby said peripheral gears pass thru lubrication,

a first aperature located in said cylinder,

a second aperature located in said cylinder,



a valve means for operatively opening and closing said first aperature,

said piston operatively opening and closing second aperature, and said first aperature operating exclusively for fuel intake, when said second aperature operates exclusively for exhaust, whereby said first and second aperatures are operatively interchangeable

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4,424,773

VALVE ROTATOR

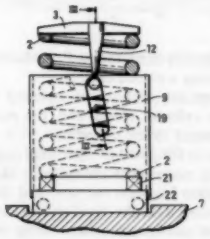
Nikolaus Wendel, Kierspe, and Joachim Plener, Halver, both of Fed. Rep. of Germany, assignors to Märkisches Werk GmbH, Halver, Fed. Rep. of Germany

Filed Aug. 6, 1981, Ser. No. 290,508

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3029988; Apr. 7, 1981, 3113944; Jul. 16, 1981, 3128086

Int. Cl.³ F01L *1/32*

U.S. Cl. 123—90.29 **6 Claims**



1. A valve rotator effective between a valve stem and a support, said rotator comprising:

an upper spring plate;

a lower spring plate spaced along an axis below said upper plate and rotatable about said axis relative to said upper plate;

a compression spring braced axially between said plates;

a two-part link element having an upper part rotationally secured to said stem and a lower part rotationally fixed in at least one rotational direction relative to said axis on said lower plate, said lower part being generally cylindrical, centered on said axis, fixed rotationally on said lower plate, and formed with a surface inclined to said axis, said upper part having a follower axially engageable with said surface; and

a unidirectional clutch between said lower plate and part and said support and permitting said lower part to rotate about said axis only in said one direction relative to said support, said lower part being a sleeve surrounding said spring and carried via said clutch on said support.

4,424,774

SELF ADJUSTING HYDRAULIC TAPPET FOR HEAT ENGINES

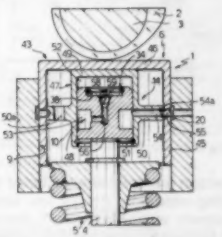
Daniele Ferrero, Vinovo, Italy, assignor to RIV-SKF Officine di Villar Perosa, SpA, Turin, Italy

Filed Sep. 17, 1981, Ser. No. 303,053

Claims priority, application Italy, Nov. 21, 1980, 68785 A/80

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.56 **7 Claims**



1. A tappet with an insertable self-adjusting hydraulic assembly, comprising, an open cup-shaped first element having an upper end wall integral with a depending cylindrical side wall to define an internal open area, the first element being slideably positioned within a cylindrical chamber seat formed in a cylinder head of an engine such that the end wall is positioned in line with and adapted to come into contact with a cam axially aligned with and above the cylindrical chamber seat, a smaller second cup-shaped element having an upper end wall and depending side wall which is adapted to be inserted within the first element and symmetrically and rigidly held in position with the end wall thereof in direct engagement with an inner surface of the end wall of the first element, a third cylindrically shaped element mounted within the second element and having its outer periphery in sliding engagement with the inner surface of the depending wall of the second element and in direct alignment with a valve stem disposed within the cylindrical chamber seat and immediately below the third element, and which has a top end surface in contact with a lower end surface of the third element, the third element having a fluid pressure chamber which is connected to a top surface thereof through a fluid supply duct and a valve assembly, the fluid chamber being in direct connection with a fluid supply hole which extends through the side wall of the second element, the fluid supply hole of the second element being aligned with a fluid supply opening in the first element and the latter being connected to a pressurized fluid supply in the cylinder head, the valve assembly of the third element including an enlarged ball accommodating seat at the top end surface of the third element at an upper end of the fluid supply duct at a hole which is of substantially less width than that of the seat, a ball of substantially greater diameter than the hole and substantially less than the upper width of the seat which is disposed substantially wholly within the seat and by its surface engagement with adjacent surfaces blocks the fluid flow through the hole, the seat permitting upward movement of the ball to permit fluid flow, and a readily insertable retainer constituting stop means connected to the top surface of the third element which extends into the seat with its periphery spaced sufficiently from the top surface of the ball member to retain the ball member in the seat and permit its upward movement to allow passage of

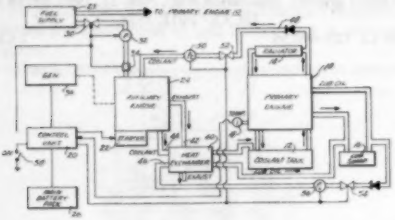
fluid upwardly through the seat to the space between the top surface of the third element and the upper end wall of the said second cup-shaped element.

4,424,775

APPARATUS FOR MAINTAINING A DIESEL ENGINE IN RESTARTING CONDITION

John M. Mayfield, Jr., Ukiah; Vernon W. Haselswerdt, Willits, and Hugh A. Hinchliffe, Ukiah, all of Calif., assignors to Microphor, Inc., Willits, Calif.

Filed Nov. 9, 1981, Ser. No. 319,113
Int. Cl.³ F02N 17/02
U.S. Cl. 123—142.5 R **4 Claims**



1. A standby system for maintaining a liquid cooled primary engine in restarting condition at very low ambient temperatures after the primary engine is shut off, the primary engine being of a type having a liquid cooling system including a radiator connected to the primary engine for normally cooling a coolant liquid circulated through the engine block and the radiator, and an expansion tank into which the coolant drains, the standby system comprising:

an auxiliary engine having a liquid cooling system, a heat exchanger having at least two fluid passages therethrough for transferring heat from one fluid to another, fluid passage means including a pump, the auxiliary engine cooling system, and one passage of the heat exchanger, one end of said fluid passage means being connected to the expansion tank and the other end being connected to the outlet connection from the primary engine block to the radiator, said pump directing fluid through the primary engine block, the auxiliary engine block, and the heat exchanger in a closed path that shunts the radiator, for transferring heat from the auxiliary engine to the primary engine block, and means directing exhaust gases from the auxiliary engine through another passage of the heat exchanger.

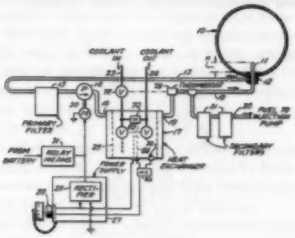
4,424,776

FUEL SUPPLY FOR A DIESEL ENGINE

Walter E. Allen, Prospect, Conn., assignor to Transamerica DeLaval Inc., Princeton, N.J.

Division of Ser. No. 145,347, Apr. 10, 1980, Pat. No. 4,351,301. This application Apr. 2, 1982, Ser. No. 364,800
Int. Cl.³ F02N 17/02; B01D 35/02
U.S. Cl. 123—142.5 R **11 Claims**

1. As an article of manufacture, a fuel-heating unit adapted for use with a diesel engine having a fuel-injection system and a circulating flow of liquid coolant, said unit being further adapted for use in a circulating fuel-supply system from which fuel is to be drawn for supply of the fuel-injection system, said article comprising a housing enclosure with coolant-in and coolant-out ports for series-connection in the circulating flow of liquid coolant and with fuel-in and fuel-out ports for series-connection in the circulating flow of fuel, the respective paths of coolant flow and of fuel flow within said enclosure being in hydraulically independent but thermodynamically coupled relation, thermostatic-valve means associated with the path of coolant flow and responsive to sensed coolant temperature to substantially curtail the rate of coolant flow for coolant temperatures below a predetermined normal operating range of coolant temperature, said thermostatic-valve means being further responsive to sensed coolant temperature within said range to permit an increased rate of coolant flow, and electrical heater-element means within said housing enclosure in heat-transfer relation with one of said paths, said last-defined means being adapted for selective external power-supply connection.

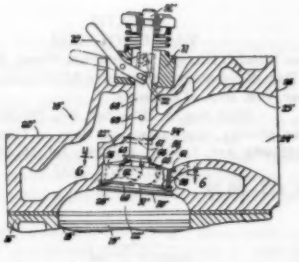


4,424,777

ENGINE INTAKE PORT WITH VARIABLE SWIRL VANES

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1982, Ser. No. 346,566
Int. Cl.³ F01L 3/00
U.S. Cl. 123—188 VA **3 Claims**



1. The combination in an internal combustion engine of

a cylinder having a closed end,

means defining an intake port opening to the cylinder through the cylinder closed end, the port having an end portion adjacent to the cylinder,

a poppet valve in the port having a head engageable with the port defining means near the cylinder closed end to close communication between the port and the cylinder and a stem connected with the head and extending centrally of the port end portion, the stem being reciprocably supported by the port defining means for movement of the valve longitudinally of the stem into open and closed positions, and

adjustable swirl means in said port end portion adjacent to the valve head, said swirl means comprising a plurality of flexible vanes supported in annularly spaced relation around said valve stem in said port end portion and extending in directions generally outwardly from the valve stem and longitudinally along the direction of flow through the port end portion, said vanes being engageable by at least a pair of relatively rotatable elements within the port, the vanes being supported by one of said pair of elements and having free ends distal from the supporting element that are engageable by abutment means of the other of said pair of elements to yieldably deform the

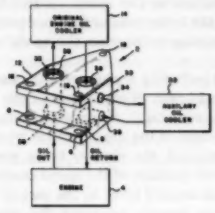
vanes upon relative rotation of said pair of elements and thereby vary the angular relation of at least portions of said vanes with respect to the longitudinal axis of the valve, whereby a rotational swirl component of fluid flow within the port is increased or decreased.

4,424,778

COUPLER FOR USE IN AN OIL COOLING SYSTEM

Minoru Yoshida, 275 E. Bloom Dr., Monterey Park, Calif. 91754

Filed Sep. 30, 1982, Ser. No. 429,117
Int. Cl.³ F01M *1/00*
U.S. Cl. 123—196 AB **4 Claims**



1. A coupler for use in an oil cooling system for an engine having oil input and output ports which includes a first oil cooler having oil input and output ports and a second oil cooler having oil input and output ports provided remotely from the engine, said coupler comprising:

a housing;

a first passageway in said housing for coupling the oil output port of said engine to said input oil port of said first oil cooler;

a second passageway in said housing for coupling said oil output port of said first oil cooler to said oil input port of said second oil cooler;

a third passageway in said housing for coupling the oil output port of said second oil cooler to said input oil port of said engine;

whereby said first and second oil coolers are connected in series.

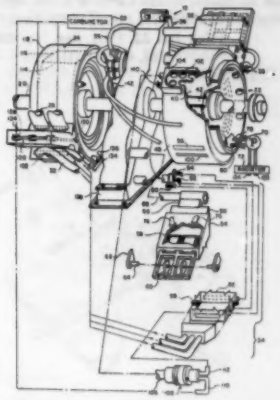
4,424,779

INTERNAL COMBUSTION ROTARY POWER PLANT SYSTEM

Ching-Ho Tseng, 323 Bonnie Meadow Cir., Reisterstown, Md. 21136

Division of Ser. No. 160,628, Jun. 18, 1980. This application Apr. 14, 1982, Ser. No. 368,392
Int. Cl.³ F02B *53/08*
U.S. Cl. 123—237 **1 Claim**

1. In a system including: an engine, a compressor for supplying gaseous fuel to the engine, means for synchronizing operation of the engine and compressor, including a driveshaft mounting the engine and compressor, the engine having: an engine housing, a rotor in the engine housing, a plurality of runners on the rotor, a plurality of engine stations on the engine housing, means at each engine station for engine-chamber forming with the runners within the engine housing, and a plurality of engine exhaust locations in the engine housing, the improvement comprising: each runner having a cavity therein, each said cavity defined by sides, front and rear walls and top; means detachably affixing each runner to the rotor, said top being detachable and said top and sides arcuately wedging out toward the rear for gathering lubricant in the front and forcing it into narrowing clearance at the rear between runner and engine housing, means for cooling each runner and the rotor by pumping fluid therethrough, the pumping means including means for introducing and for removing fluid axially to respective concentric grooves axially in the rotor, and conduit means



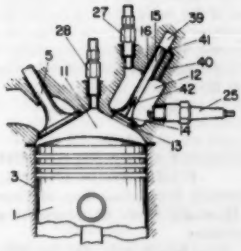
in the rotor connecting said concentric coolant grooves with a said cavity in each said runner.

4,424,780

INTERNAL COMBUSTION ENGINE FOR DIVERSE FUELS

Horacio A. Trucco, 13 Saddler Ct., Huntington Station, N.Y. 11746

Continuation-in-part of Ser. No. 107,338, Dec. 26, 1979, Pat. No. 4,372,264. This application Sep. 7, 1982, Ser. No. 415,677
Int. Cl.³ F02B *19/02*; F02M *25/06*
U.S. Cl. 123—255 **12 Claims**



1. An intermittent internal combustion engine having a combustion chamber and means for supplying a fresh charge of air thereto, the improvement comprising a fuel vaporizer chamber communicating with said combustion chamber, a vaporizer valve between said fuel vaporizer chamber and said combustion chamber; a stem chamber, a passage interconnecting said stem chamber and said vaporizer chamber when said vaporizer valve is closed, means to cyclically open said vaporizer valve during the compression stroke to discharge the air compressed inside said combustion chamber into said fuel vaporizer chamber to form a combustible mixture, means to cyclically close said vaporizer valve during the expansion stroke of the engine to entrap hot products of combustion within said fuel vaporizer chamber, a fuel injector discharging into said fuel vaporizer chamber, means to supply said fuel injector with a metered amount of liquid or slurry fuel while said combustion products are entrapped whereby the fuel is vaporized inside said fuel vaporizer chamber because it absorbs heat by direct mixing with said entrapped products of combustion.

4,424,781

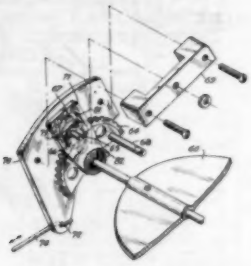
MODIFIED CONTROL LINKAGE FOR SUPERCHARGED INLET AIR TO INTERNAL COMBUSTION ENGINE

Stephen R. Speer, S. 358 Cover d'Alene Apt. #6, and Hugh G. Evans, W. 214 6th Ave., both of Spokane, Wash. 99204

Filed Jul. 22, 1982, Ser. No. 400,899

Int. Cl.³ F02D 9/08

U.S. Cl. 123—342 16 Claims



1. An improved engine throttle control for controlling the power output of an engine, by controlling the flow of combustion air to the engine, the throttle control comprising a butterfly-type throttling valve, a rotating butterfly-type valve member within the valve throat, the valve member rotating between a first end position closing the valve throat and a second end position fully opening the valve throat; a rotating actuating member for operating the valve member; a mechanical control means for causing rotation of the actuating member; and a variable rate mechanical control linkage between the actuating member and the valve member, the control linkage providing a variable output movement advantage between the actuating member and the rotating valve member, the output movement advantage being less than one during those portions of the range of rotation of the valve relatively adjacent the two end positions of the valve, and the output advantage during a mid-range portion of the rotation of the valve member being greater than one, thereby rendering more nearly linear the relationship between the rotation of the actuating member and the change in flow area in the throat.

4,424,782

SHUT-OFF DEVICE FOR A SELF-IGNITING INTERNAL COMBUSTION ENGINE

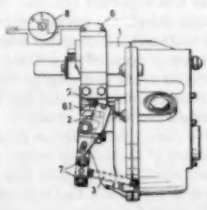
Hubert Emmerich, Brühl, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,637

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3033971

Int. Cl.³ F02D 7/00

U.S. Cl. 123—367 1 Claim



1. In combination with a diesel internal combustion engine having at least one combustion chamber into which fuel is directly injected by a fuel-injection pump, wherein the engine is operated by an ignition switch to run when the ignition switch is in a first position indicating "on" and to stop when the ignition switch is in a second position indicating "off"; the improvement characterized by:

a speed control lever connected to the fuel-injection pump and pivoted with respect thereto for movement in an arcuate path between a first position in which no fuel is injected and the engine is stopped; a second position in which the engine idles, and a third position in which the engine operates at maximum speed;

a spring attached to the speed control lever, the spring having a bias for urging the lever toward the first position wherein no fuel is injected and the engine stops;

means attached to the speed control lever for selectively moving the lever toward the third position against the bias of the spring to increase the speed of the engine when desired;

a solenoid including a plunger; the plunger projecting into the arcuate path of movement of the speed control lever when the solenoid is energized and out of the arcuate path of movement of the speed control lever when the solenoid is deenergized; the plunger being positioned adjacent to the second position of the speed control lever for holding the speed control lever in the second position when projected, by directly engaging the speed control lever to hold the engine at idle when the means for moving the speed control lever is released, and

an electrical power circuit connected to the solenoid for energizing the solenoid, the electrical power circuit including the ignition switch connected therein, the ignition switch opening the circuit to interrupt power to the solenoid when in the second position and closing the circuit to project the plunger when in the first position; whereby the normal condition of the engine is the idle condition when the ignition switch is in the first position and the normal condition of the engine is "stopped" when the ignition switch is in the second position, and whereby the means for moving the speed control lever advances the lever from the first position of the lever when the ignition switch is "off" and advances the lever from the second position thereof when the ignition switch is "on".

4,424,783

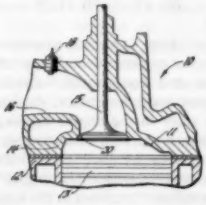
COMBUSTION CHAMBER INLET TEMPERATURE CORRECTED COMBUSTION INITIATION TIMING

Allan J. Kotwicki, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 321,489, Nov. 11, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,569

Int. Cl.³ F02P 5/04

U.S. Cl. 123—418 6 Claims



1. Apparatus for initiating optimally timed combustion in the combustion chamber of a four stroke internal combustion engine having a rotating crankshaft, the combustion chamber having an inlet opening from an inlet passage, said combustion chamber further being adapted to receive intake air through said inlet and inlet passage during each intake stroke and being

characterized by residual exhaust gases which tend to temporarily expand backward through said inlet into the inlet passage at the end of each exhaust stroke before being swept back into the combustion chamber by said intake air during the following intake stroke, the apparatus comprising, in combination:

means effective to measure the temperature of gases in the inlet passage adjacent the inlet so as to be exposed to said backwardly expanding residual exhaust gases as well as the incoming intake air, said temperature measuring means having a time averaging characteristic, such that the measured temperature at least at the end of the expansion stroke is affected by the temperatures of both said residual exhaust gases and said incoming intake air in proportion to the relative times of exposure to each and thus closely approximates the mixture in the combustion chamber at the beginning of the compression stroke; and

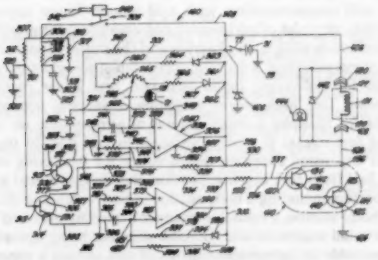
means effective to initiate combustion events in said combustion chamber at a crankshaft rotational position based at least in part on the temperature as measured by said temperature measuring means, whereby the timing of said event is corrected for temperature related variations in reaction rate of the mixture within the combustion chamber.

4,424,784

MANUALLY ADJUSTABLE APPARATUS AND SYSTEM FOR SELECTIVELY CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Robert J. Miller, Warren, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,876
Int. Cl.³ F02B *33/00*; F02M *7/00*
U.S. Cl. 123—438 **23 Claims**



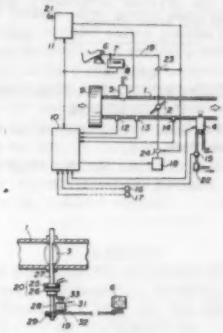
1. Fuel metering apparatus for a combustion engine which produces output power as a consequence of combustion air and fuel being supplied thereto, said fuel metering apparatus comprising fuel metering means effective for metering fuel to said engine as to attain at least a first fuel-air ratio based on the rate of air flow to said engine, and manually selectively controlled electrical adjustment means effective for causing said fuel metering means to meter fuel to said engine at rates of metered fuel flow which based on the rate of air flow to said engine results in second fuel-air ratios different from said first fuel-air ratio.

4,424,785

FUEL FEED SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Takashi Ishida, Ohi, and Noboru Tominari, Tokyo, both of Japan, assignors to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,636
Claims priority, application Japan, Jul. 29, 1981, 56-117834
Int. Cl.³ F01B *25/08*; F02D *28/00*
U.S. Cl. 123—479 **8 Claims**



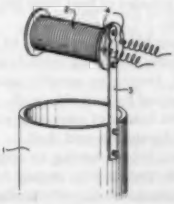
1. A fuel feed system for an internal combustion engine, comprising a fuel injector and a main control unit having an electronic calculating function, and utilizing inputs from control elements such as a fuel command means for detecting the degree of movement of an accelerator pedal, an air flow sensing device within an intake conduit, encoder means connected to a throttle valve actuator, compensation means providing electric signals for said main control unit for comparison with memories programmed in advance on the basis of the functional relations between the parameters of said control elements and compensation elements, and a throttle valve actuated on the basis of a required amount of air calculated from fuel flow input so as to give an optimum amount of air; and an auxiliary control unit adapted to operate when the aforesaid main control unit is out of order, the shaft of said throttle valve having a coupling device actuated by a signal from said auxiliary control unit so that actuating of said accelerator pedal directly turns said throttle valve, whereby the engine performs at a low output level in a limited operation mode which insures minimum running.

4,424,786

FUEL SAVING DEVICE

Jean C. Imbert, Oreleys, Fox Amphoux, France 83126

Filed Oct. 16, 1981, Ser. No. 311,929
Claims priority, application France, Oct. 20, 1980, 80 22411
Int. Cl.³ F02M *27/04*; B01D *35/06*
U.S. Cl. 123—538 **3 Claims**



1. The method of treating the fuel supplied to an internal

combustion engine having a carburetor, comprising the steps of:

(a) positioning in the air-fuel supply stream to the carburetor a solenoid having a red copper coil, with its axis at right angles to the direction of movement of the air-fuel stream to the carburetor, and energizing the coil to produce a magnetic field surrounding the carburetor,

(b) positioning the coil to cause minimum fuel consumption,

(c) reversing the polarity of the coil at the next change of the full-to-low and low-to-full lunar phase, and

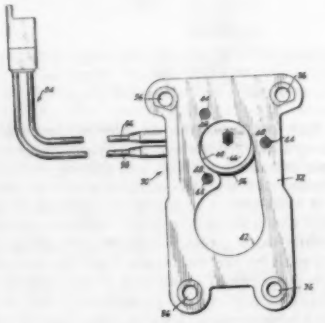
(d) continuing the reversal of polarity with successive changes in the said lunar phases.

4,424,787

ENCAPSULATED PTC HEATER FOR COLD-START CARBURETOR

Edward J. Fitz, Fairfield, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,374
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **12 Claims**



1. An encapsulated PTC heater unit for a cold-start carburetor, comprising, in combination:

(a) an electrical resistance ceramic wafer of PTC material,

(b) a holder assemblage for mounting said wafer in an engine carburetor, in the air/fuel passage thereof,

(c) said wafer having on its opposite side surfaces ohmic terminal means for conducting current through the resistance thereof,

(d) said wafer having a thickened annular peripheral portion and a multiplicity of passages extending through it from one side to the other, said passages having hexagonal outlines and forming a regularly interfitted passageway means through the wafer,

(e) the portions of said wafer which define said hexagonal passages constituting a resistive honeycomb grid of relatively large exposed surface area which offers a reduced resistance to air/fuel flow through it while at the same time maximizing the transfer of heat from the ceramic material to said air/fuel flow,

(f) said holder assemblage comprising an annular metal shell having a continuous, inwardly extending flange constituting its bottom wall, having an annular side wall, and having clincher lugs carried by said side wall,

(g) an annular wafer holder of insulating material, in which the wafer is nested, located in said shell,

(h) the walls of said holder having an angular cross section,

(i) a circular metal contact ring in said holder, engaging the ohmic terminal means at one side surface of the peripheral portion of said wafer, said metal contact ring having a laterally-extending connector portion passing through the side wall of said metal shell,

(j) bushing means, insulating said connector portion of the contact ring from the metal shell,

(k) a ring-shaped resilient metal contact means in said metal shell, engaging the ohmic terminal means at the opposite side surface of the peripheral portion of said wafer,

(l) said clincher lugs being folded over said resilient contact means and holding the same and the wafer captive in said metal shell,

(m) said resilient contact means being in good electrical contact with said metal shell,

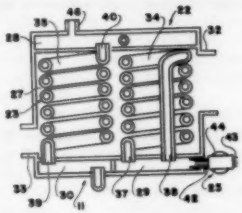
(n) said resilient contact means and said circular metal contact ring clamping the thickened annular peripheral portion of the wafer and said peripheral portion resisting cracking under the pressure of said clamping action.

4,424,788

FUEL APPARATUS

Leonard M. Bookout, P.O. Box 270, Livingston, Mont. 59047

Filed Oct. 26, 1982, Ser. No. 436,830
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **11 Claims**



1. A fuel apparatus including a housing portion, a fuel treating portion, a fuel metering portion and a flow control portion; said housing portion including a main chamber, an upper expansion chamber and first and second lower expansion chambers, said main chamber including an inlet connectable to an exhaust gas source of an internal combustion engine, an outlet for venting said exhaust gas to the atmosphere; said fuel treating portion including first and second conduit coils disposed within said main chamber, each of said conduit coils including an inlet and an outlet, the inlet of said first coil communicating with said first lower expansion chamber and the outlet of said first coil communicating with said second lower expansion chamber, the inlet of said second coil communicating with said second lower expansion chamber and the outlet of said second coil communicating with said upper expansion chamber, inlet means for delivering liquid into said first lower expansion chamber, said inlet means including a vacuum source and means for bleeding a small amount of atmospheric air into a liquid fuel stream at a point adjacent to said inlet of the first lower expansion chamber, outlet means for delivering vaporized fuel from said upper expansion chamber; said fuel metering portion including a body section, a bore extending through said body section, a rotatable member extending into said bore, an external section of said rotatable member being operatively connectable to carburetor controls of said engine, a vaporized fuel inlet and an outlet communicating with said bore; said flow control portion including means for monitoring the flow of liquid fuel into said first lower expansion chamber.

4,424,789

FUEL LINE PREHEATER

Delbert D. Spalding, 3005 S. 33rd Ter., St. Joseph, Mo. 64503

Filed May 26, 1981, Ser. No. 267,336
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **23 Claims**

1. In an internal combustion engine having a fuel system supplying liquid hydrocarbon fuel to said engine,

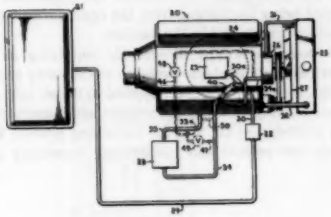
said fuel system including a fuel tank, a carburetor and a fuel pump for directing the fuel from said tank to said carburetor through a fuel feed line, and

a water cooling system for the engine,

said water cooling system including a radiator, a water jacket on the engine block, a water pump and at least one water circulating conduit of the engine cooling system external of the engine block running from said block to said pump or the radiator,

the improvement comprising:

a portion of the fuel feed line between the fuel pump and the carburetor enclosed with a heat exchanging hollow sleeve adapted to receive liquid water heat exchanging medium therein around a length of said fuel feed line to heat the fuel therein,



there being but a single inlet opening into said sleeve for said liquid water heat exchanging medium to enter and exit said sleeve,

and a single flow line interconnecting the said water circulating conduit with said single inlet opening in said sleeve, whereby there is flow communication for hot water from said engine cooling system between said conduit and sleeve,

the single inlet opening into said sleeve comprising a pipe length making, with said sleeve, a T connection, the fuel feed line running through the top arm of the T and the connection with the conduit including a flexible line engaging said pipe line,

there being a lesser diameter flow conduit within, connected to and extending outwardly from said sleeve pipe length into said flexible line aiding in flowing heat exchanging medium from said conduit into said sleeve and therefrom.

4,424,790

METHOD OF IMPROVING THE EFFICIENCY OF A SUPERCHARGED DIESEL ENGINE

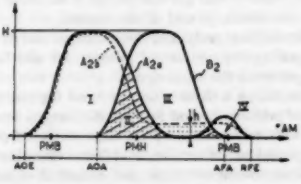
Remi Curtil, Montsoult, France, assignor to Societe d'Etudes de Machines Thermiques, S.E.M.T., Saint-Denis, France

Continuation of Ser. No. 113,968, Jan. 21, 1980, abandoned. This application May 11, 1982, Ser. No. 377,142

Claims priority, application France, Feb. 5, 1979, 79 02877

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—559 **6 Claims**



1. A method for improving the efficiency of a four-stroke-cycle supercharged diesel engine of constant pressure type, having a timing diagram which is constant in the engine cycle, including an overlap stage between the lift of at least one intake valve and at least one exhaust valve, the method comprising

closing tbe intake valve, in accordance with the Miller cycle, at a crankshaft rotation angle between 40° before bottom dead center and 10° after bottom dead center in order to automatically modulate the trapping efficiency of the engine cylinders,

at the end of said overlap stage partially closing the exhaust valve,

maintaining a partial lift of said exhaust valve during a major part of the intake stage, and

closing said exhaust valve beyond the instant of said intake valve closing, in order during gradual increase in engine load, to automatically and gradually reduce, from starting to nominal power, the effective compression ratio and the temperatures at the end of compression by concomitantly reducing the amount of gas or fresh air present in the exhaust conduit and consisting of burned gases or air reintroduced into the cylinder near bottom dead center, according to the natural variation of the relationship between the supercharging air pressure and the counter-pressure at the cylinder exhaust.

4,424,791

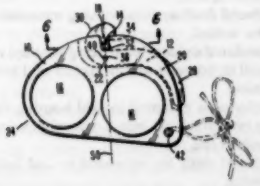
PASSIVE BOWSTRING RELEASE MECHANISM

Paul Muehleisen, 3 Elkshead Ter., Yardville, N.J. 08620

Filed Jun. 7, 1982, Ser. No. 385,989

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—35 A **8 Claims**



1. A passive bowstring release mechanism comprising:

(a) a housing means defining gripping aperture means extending therethrough to facilitate holding of the bowstring release mechanism by a user, said housing means defining a longitudinal side cavity along a lateral edge thereof, said housing means further defining a vertical slot means extending vertically through said housing means and through said longitudinal side cavity;

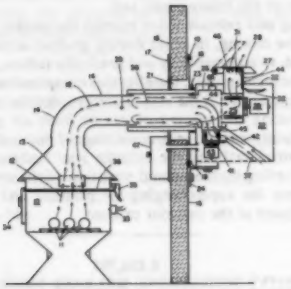
(b) a securement arm means pivotally secured with respect to said housing means within said longitudinal side cavity to be movable between a retaining position, for holding a bowstring extending through said vertical slot means, and a releasing position, allowing release of a bowstring from said vertical slot means, said securement arm means including a handle section movable between the position within said longitudinal side cavity, when said securement arm means is in the retaining position, and a position outside of said longitudinal side cavity, when said securement arm means is in the releasing position, said securement arm means further including a holding section including a concave surface being pivotally movable into and out of said vertical slot means to selectively engage and selectively hold a bowstring extending vertically therethrough responsive to pivotal movement of said securement arm means; and

(c) a pivot means pivotally attaching said securement arm means with respect to said housing means and said longitudinal side cavity, the axis of said pivot means being parallel to and laterally aligned with respect to the axis of said vertical slot means to minimize that force exerted upon said securement arm means urging same to move toward the releasing position.

4,424,792
INDUCED DRAFT SYSTEM FOR RESIDENTIAL HEATERS

Ronald J. Shimek, 8996 W. 154th St., Prior Lake, Minn. 55372, and Daniel C. Shimek, 2090 Fairmount Ave., St. Paul, Minn. 55105

Filed Mar. 29, 1982, Ser. No. 362,529
Int. Cl.³ F24C *1/14*; F24J *11/00*
U.S. Cl. 126—80 **13 Claims**



1. An induced draft system for connection to a heater that is adapted to heat an interior space, comprising:

an insulated exhaust pipe for connection to said heater in said interior space,

an induced draft system housing mounted outside said space to be heated,

said insulated exhaust pipe being adapted to connect through a wall to connect said heater to said induced draft system housing,

an intake pipe mounted in said housing for conducting outside cool fresh air into a central portion of said insulated exhaust pipe,

an induced draft fan mounted in said induced draft system housing,

said induced draft fan having an exhaust duct connected thereto for conducting hot gas from said heater to the outside of said housing,

said induced draft fan having an intake duct connected thereto and connected to said insulated exhaust pipe, and

an electric drive motor connected to said induced draft fan for pulling hot gas from said heater into said insulated exhaust pipe and for pulling cool outside fresh air from said intake pipe and for mixing said hot gas in said cool fresh air in said insulated exhaust pipe before exhausting said mixed hot gas and cool fresh air from said exhaust duct.

4,424,793
POWER GAS BURNER

Myron T. Cooperrider, North Royalton, Ohio, assignor to R. W. Beckett Corporation, Elyria, Ohio

Continuation of Ser. No. 159,948, Jun. 16, 1980, abandoned.
This application Jan. 4, 1983, Ser. No. 455,476
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 B **1 Claim**

1. A power fuel gas burner comprising:

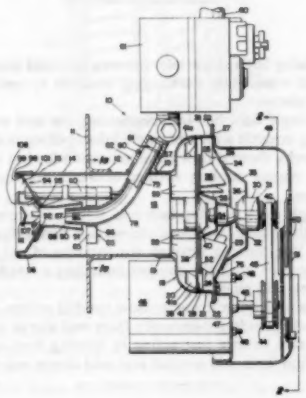
an air tube having an inlet end and a discharge end,

a venturi disposed within and coaxial with the air tube, the venturi having an entry portion of lesser diameter than the internal diameter of the air tube, the entry portion of the venturi tapering to a throat of reduced diameter as compared to the entry portion thereof, and a discharge end disposed near the discharge end of the air tube,

an eductor tube for supplying fuel gas to the burner, said eductor tube having an open discharge end concentric with the venturi and disposed in the throat of the venturi, said eductor tube having an inlet end that is disposed outside of the air tube,

means for supplying fuel gas to the inlet end of the eductor tube, said means including a pressure regulator and a removable and replaceable orifice plate interposed between said pressure regulator and said educator tube and located outside of said air tube, said orifice plate defining a metering orifice for controlling the rate of flow of fuel gas into the eductor tube, the cross-sectional area of the metering orifice being small as compared to the cross-sectional area of the open discharge end of the eductor tube, whereby the velocity of the fuel gas as it is discharged from the eductor tube is greatly reduced as compared to the velocity of the fuel gas as it is discharged from the metering orifice into the eductor tube, the fuel gas so supplied being discharged from the open discharge end of the eductor tube within the venturi,

a turbo compressor-type blower for supplying air under greater than atmospheric pressure to the entry end of the air tube, a portion of the air supplied to the air tube by said blower flowing through the venturi and constituting primary combustion air, and the remaining portion flowing outside the venturi and constituting secondary air, the



velocity of flow of air within the venturi being increased in the throat of the venturi and adjacent the open end of the educator tube whereby the pressure of the air adjacent said end of the eductor tube is reduced as compared to the pressure of air supplied to the air tube, the fuel gas supplied to the eductor tube being discharged through the open end thereof into this zone of reduced pressure and being mixed with the primary air supplied to the venturi, the mixture of fuel gas and primary air being discharged from the discharge end of the venturi,

means immediately adjacent the discharge end of the venturi for igniting the mixture of primary air and fuel gas discharged from the venturi, and

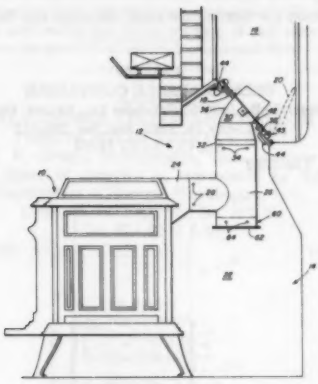
means including a flame retention head for mixing the mixture of primary air and fuel gas discharged from the venturi with said secondary air downstream from the discharge end of the venturi, said flame retention head having a frusto-conical shape and a central opening that is coaxial with the discharge end of the venturi, said opening being disposed upstream of the circumferential portion thereof that is secured to said air tube, said discharge end of said venturi being secured to the edge of said opening in the flame retention head.

4,424,794

FIREPLACE ADAPTER

Charles Page, Randolph, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.

Filed Apr. 13, 1981, Ser. No. 253,399
Int. Cl.³ F24B 7/00
U.S. Cl. 126—123 6 Claims



1. A universal fireplace flue adapter assembly for sealably connecting the flue outlet of a heating device to the fireplace chimney flue through a fireplace throat having an existing damper assembly including a damper frame with an opening, the plane of the opening making a given angle with the horizontal up to a maximum angle, and a movable damper element normally adaptable to open or close the opening to the chimney flue, movable to a position out of the way of the opening, comprising

an adapter plate having an opening smaller than the damper frame opening,

means for sealably securing said adapter plate parallel to and in juxtaposition with the damper frame so that the adapter plate opening is encompassed by and substantially coplanar with the damper frame opening,

a curved duct extending through the adapter opening, said curved duct having a lower inlet end below the adapter plate and an upper outlet end extending upwards behind the adapter plate, the angle between the direction of the inlet and outlet ends corresponding to the maximum angle,

said curved duct further including a curved transition section between said inlet and outlet ends with a geometry such that the outer surface of said curved duct which intersects said adapter plate opening is substantially congruent to the inner periphery of the opening for any angle made by said existing damper frame, said curved transition section being a hollow section formed by front and back walls and a pair of sidewalls, at least the front wall being curved for allowing angular movement such that when the duct is tilted on the line where the back wall meets the back edge of the opening, the cross section of the curved duct intersected by the plane of the adapter opening continuously matches that of the adapter opening, and

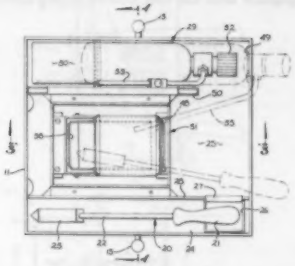
means for securing said curved duct in said adapter plate so that the lower inlet end is substantially vertical regardless of the damper frame angle.

4,424,795

HEATER BOX FOR USE AS AN IMPROVED PORTABLE SOLDERING FURNACE UNIT

Jac A. Plessner, 7842 Clearfield Ave., Panorama City, Calif. 91402

Filed Dec. 18, 1981, Ser. No. 265,413
Int. Cl.³ F24C 3/00
U.S. Cl. 126—237 6 Claims



1. A heater box for use in combination with a heating unit in an improved portable soldering furnace which includes:

a. a casing having a base and a hood which covers the base, the base having a first compartment, which is long and narrow, and a second compartment, which is also long, but which is substantially wider than the first compartment wherein a soldering iron having a shaft, a handle and a soldering head may be disposed in the first compartment; and

b. a heating unit which is disposed in the second compartment and which heats the soldering head of the soldering iron, said heater box comprising:

a. a heating chamber having a back wall, a bottom wall and a pair of side walls and being open at both its front and its top, said heating chamber having means for being mechanically coupled to the heating unit and being disposed in the second compartment of the base; and

b. insulating means for insulating the heating unit from said heating chamber being disposed in the second compartment of the base.

4,424,796

WIND-POWERED HEAT-GENERATING APPARATUS

James W. Fish, 11700 SW. 29th St., Yukon, Okla. 73099

Filed Jun. 11, 1981, Ser. No. 272,769
Int. Cl.³ F24C 9/00
U.S. Cl. 126—247 6 Claims

1. A heat-generating apparatus comprising:

a friction chamber having an outer surface immersible in a heat transfer fluid and having a cylindrically shaped inner surface;

a drive shaft rotatably supported in the friction chamber, and coaxially disposed with respect to the inner surface of the friction chamber;

power means for driving rotation of the drive shaft about its longitudinal axis;

an operating plate supported by the drive shaft at a selected longitudinal location thereon, and rotatable with the drive shaft;

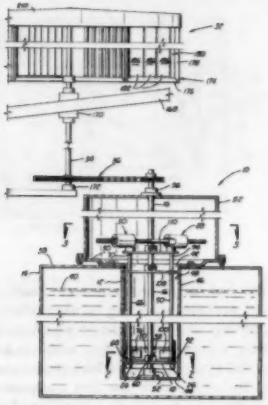
a first shoe member mechanically engaged with the operating plate and having a friction-generating surface;

first shoe placement means, supported by the operating plate, for urging the first shoe member away from the operating plate to a selectable distance therefrom, the first shoe member, when stationary, not being subject to a restoring force urging the first shoe member to an equilibrium location, the first shoe placement means comprising: a first shoe support plate pivotally supported by the oper-

ating plate at a first pivot point, the first shoe support plate supporting the first shoe member and having a first cam-engaging surface spaced from the first pivot point;

a first control shaft supported on the operating plate and extending substantially parallel to the drive shaft, the first control shaft rotatable about its longitudinal axis in a first rotational direction and in an opposite second rotational direction; and

a first control cam supported on the first control shaft and engagable with the first cam-engaging surface, the first



cam-engaging surface of the first shoe support plate, and the first shoe member disposed on the first shoe support plate, urgable away from the operating plate in response to rotation of the first control shaft in the second rotational direction; and

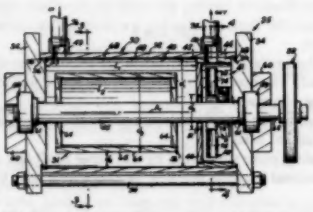
first centrifugal control means, operatively engaged with the first shoe placement means, for controlling location of the first shoe member such that the friction-generating surface of the first shoe member is urged toward the inner surface of the friction chamber in response to increasing drive shaft rotational speed.

4,424,797

HEATING DEVICE

Eugene Perkins, Rte. One, Dawsonville, Ga. 30534

Filed Oct. 13, 1981, Ser. No. 311,074
Int. Cl.³ F24C *9/00*
U.S. Cl. 126—247 **1 Claim**



1. Apparatus for heating a liquid comprising:

(a) a housing having an internal chamber bounded by a cylindrical wall and end walls,

(b) a second chamber bounded by a cylindrical wall and end walls and being co-axial with the first chamber and communicating with the first chamber for free movement of liquid between them,

(c) a rotatably mounted shaft extending axially through the two chambers,

(d) a rotor mounted on the shaft within the first chamber and having a cylindrical surface spaced inwardly of the cylindrical surface of the chamber having a space between the cylindrical walls to be filled by a liquid,

(e) a pump mounted on the shaft in the second chamber,

(f) a fluid inlet port opening into the rotor chamber, and a fluid outlet port opening from the pump chamber,

(g) a liquid filling the rotor chamber and the pump chamber, and

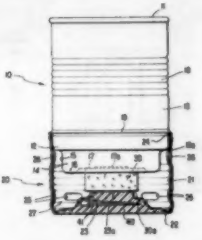
(h) means for rotating the shaft, the rotor and the pump.

4,424,798

SELF-HEATABLE CONTAINER

Hans-Dieter Volk, 1600 S. Bayshore La., Miami, Fla. 33133

Filed May 28, 1982, Ser. No. 383,122
Int. Cl.³ A47G *23/04*
U.S. Cl. 126—262 **10 Claims**



1. A self-heatable container comprising:

(a) a container member having a bottom provided with a downwardly extending heat-transfer projection, said projection having a downwardly opening recess;

(b) a cup-shaped member having an upwardly extending wall connected to the bottom of said container member, said cup-shaped member having a base provided with an upwardly extending projection, said cup-shaped member further having holes to allow entry and exit of air; and

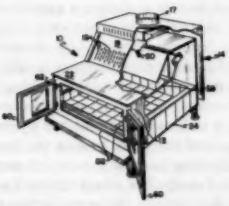
(c) a fuel pellet positioned in said recess and held therein by the upwardly extending projection of said cup-shaped member.

4,424,799

AUTOMATIC ADJUSTABLE AIR BAFFLE

Tommy W. Patterson, P.O. Box 65, Hayesville, Ohio 44838

Filed Jan. 14, 1981, Ser. No. 225,023
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—289 **11 Claims**



1. An automatic baffle for a fire container, comprising:

a flue vent in the fire container,

said container having an opening,

a door covering said opening and normally being in a closed position,

the automatic baffle, said baffle located in said flue vent of said container,

a baffle rod, said baffle rod attached to said baffle,

a connecting rod means with one end bearing against said door and the remaining end attached to said baffle rod for maintaining said baffle in a sufficient opened position to maintain combustion in said fire container,

said baffle rod attached to said baffle off center so that the weight of said off center portion through said connecting rod bears against said door and causes said baffle to rotate about said baffle rod upon opening of said door and increases the amount of air intake into said flue.

4,424,800

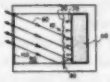
THERMAL CONTROL SYSTEM AND METHOD FOR A PASSIVE SOLAR STORAGE WALL

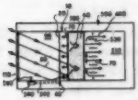
Joseph K. E. Ortega, Westminister, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 10, 1981, Ser. No. 282,286

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—419 **14 Claims**





1. A thermal control system for a thermal storage wall wherein said thermal wall is capable of storing thermal energy from insolation of solar radiation, said system comprising a single regulating means spaced a predetermined distance from said thermal wall for controlling a charging of said wall and for regulating the release of thermal energy from said wall, said regulating means being selectively adjustably operable in a range from a fully opened to a fully closed position, said regulating means being substantially transparent to said incoming solar radiation such that when said regulating means is in any position said wall receives substantially all of said solar radiation, and wherein said regulating means is substantially opaque to said thermal energy.

4,424,801

SOLAR DIRECTION SENSOR

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

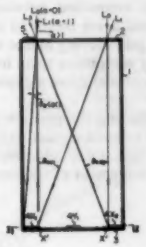
Filed Jun. 1, 1981, Ser. No. 269,396

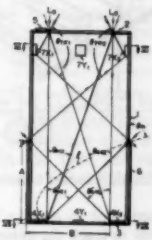
Claims priority, application Japan, Jun. 10, 1980, 55-78261; Oct. 16, 1980, 55-144926

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—425 **6 Claims**

1. A solar direction sensor comprising: a cylinder; an opaque flange mounted on the top end portion of said cylinder and having a diameter smaller than the inner diameter of said cylinder; means for detecting the position of the sun, said means including; a first beam sensor disposed on the top face of said flange and having an output signal L_0; at least two pairs of beam sensors including a second sensor having an output signal L_1 and third beam sensor having an output signal L_2, said second and third beam sensors disposed at symmetrical positions on the lower end portion of said cylinder, the diameter of the inner end of each of the beam sensors being equal to the inner diameter of said flange; the side of the second or third sensor that contacts solar beam flux in the cylinder is designated as 0, and the ratio of the position where the periphery of said beam flux intersects said first or second beam sensor to the





entire length of the sensor is designated as α; and said means detects the position of the sun by obtaining the value of α from the following equation

$$\alpha = \frac{L_1 - L_2}{L_0 - 2L_2}.$$

6. A solar direction sensor comprising: a circular cylinder, an opaque flange having a beam sensor disposed on the top face thereof, said flange mounted on the top end portion of said cylinder and having a diameter smaller than the inner diameter of said cylinder and at least two pairs of beam sensors disposed at symmetric positions on the lower end portion of said cylinder, the diameter of the inner end of each of the beam sensors being equal to the inner diameter of said flange; the upper half of said cylinder being transparent and the lower half of said cylinder being opaque; and at least two pairs of beam sensors are disposed at symmetric positions on the inner wall of the upper portion of said cylinder.

4,424,802

PNEUMATIC DRIVE FOR SOLAR CONCENTRATORS

Gordon R. Winders, Oak Ridge, Tenn., assignor to Sun Trac Industries, Inc., Oak Ridge, Tenn.

Filed Oct. 8, 1981, Ser. No. 309,812

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—425 **12 Claims**

1. A drive system for positioning a solar concentrator comprising:

gearing means mounted to a solar concentrator for moving said solar concentrator to track the sun;

drive means responsive to pulses of compressed air connected to and for driving said gearing means;

a source of compressed air;

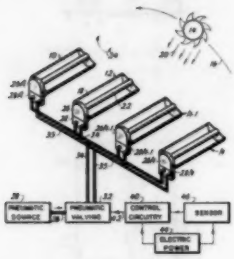
pneumatic valving responsive to electrical drive signals for

selectively providing pulses of compressed air to said drive means;

first and second conduits, said first conduit connected between said source of compressed air and said pneumatic valving means to provide compressed air to said pneumatic valving, said second conduit connected between said pneumatic valving means and said drive means to carry said pulses of compressed air from said valving means to said drive means;

master control circuitry responsive to an input control system for providing said electrical drive signals to said pneumatic valving;

sensing means for monitoring the position of the sun, and for providing said input control signals to said master control circuitry such that said solar concentrator is selectively moved to track the movement of the sun.



10. A method of positioning a solar concentrator comprising the steps of:

mounting a solar concentrator to gearing means for moving said solar concentrator to track the movement of the sun;

driving said gearing means in response to pulses of compressed air;

selectively opening and closing pneumatic valving for providing pulses of compressed air to said drive means in response to electrical drive signals;

providing electrical drive signals to said pneumatic valving in response to electrical control signals, and

providing electrical control signals representative of the movement of the sun across the sky.

4,424,803

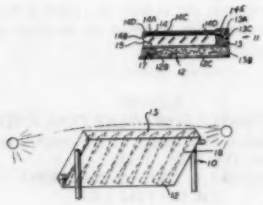
SOLAR COLLECTOR

Fred D. Bogardus, 2149 Post Rd., Southport, Conn. 06490

Filed May 10, 1982, Ser. No. 376,286

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **1 Claim**



1. A solar heating for heating air comprising

a solar collector having a bottom wall and circumscribing end walls connected to said bottom wall to define a housing having an opened exposed side adapted to be directed toward the sun,

means for thermally insulating the walls of said housing about the exterior surface thereof,

a cover means connected to said housing to define a closure for said exposed side, said cover means being pervious to the sun's rays and spaced from the bottom wall of said housing to define therebetween an air heating plenum, said cover means including a pair of spaced apart light pervious sheet material, and a plurality of traversely spaced apart webs interconnected in space relationship between said pair of light pervious sheets, said webs being formed of the same material as said light pervious sheets,

a plurality of spaced apart vanes extending transversely between opposed end walls of said housing in said air heating plenum,

said vanes being formed of thin, flat thermal conducting material whereby each vane is twisted between its ends whereby the respective ends of said vanes are off-set approximately 90° relative to each other so as to optimize the exposed surface area of said vanes to the direct rays of the sun as the sun transverses an arc relative thereto,

means for securing the ends of the respective vanes to the adjacent end wall of said housing,

and said vanes having their respective longitudinal edges spaced from said bottom wall and lowermost light pervious sheet of said cover means,

and a blackened heat absorbing coating disposed on both sides of said vanes and the interior surfaces of said housing,

means defining an inlet into said plenum, and means defining an outlet for said plenum,

and means for imparting a flow of air through said plenum from said inlet to said outlet whereby the air flowing therethrough passes in direct heat transfer relationship to said vanes extending thereacross.

4,424,804

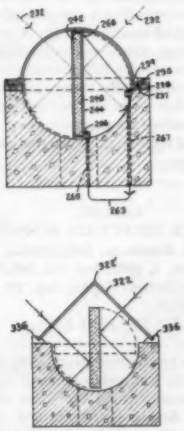
PASSIVE SOLAR HEATING AND COOLING MEANS

Kenneth S. Lee, 2046 Mershon, Ann Arbor, Mich. 48104

Filed Jun. 30, 1980, Ser. No. 164,602

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—430 **18 Claims**



1. A passive solar thermal storage device comprising a thermal storage column, a concavity formed in the thermal storage column, glazing covering the concavity to form a chamber, substantially rigid insulating means positioned within the chamber and rotatable at least partially into the concavity in the thermal storage column to open and expose the concavity

to insolation, said insulating means substantially covered on at least one side with a heat and light reflective surface, and means to rotatably actuate the reflective insulation means, said concavity in the thermal storage column exposable to both unreflected and reflected insolation with said insulating means fully opened.

7. A passive solar thermal storage device comprising a thermal storage column, substantially rigid insulating means at least partially covering the thermal storage column in the closed position, said insulating means rotatable relative to the thermal storage column, a heat and light reflective surface substantially covering at least one side of said insulating means, and at least one concavity formed in the thermal storage column, said reflective insulating means being rotatable at least partially into the concavity in the thermal storage column to open and expose the concavity to insolation and said concavity in the thermal storage column exposable to both unreflected and reflected insolation with said insulation means fully opened.

4,424,805

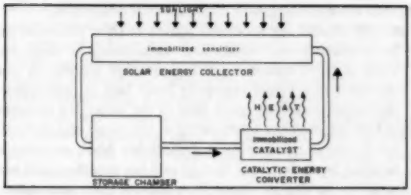
SOLAR ENERGY SYSTEM AND METHOD OF USE

Michael P. Neary, Rte. 7, Box 124N, Santa Fe, N. Mex. 87501

Continuation-in-part of Ser. No. 894,826, Apr. 10, 1978, abandoned, and Ser. No. 911,056, May 30, 1978, abandoned. This application Apr. 3, 1980, Ser. No. 136,496

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—452 **22 Claims**



16. In a method of storing and retrieving solar energy in the form of heat, the step of treating in a nonaqueous system a liquid photo-isomer of high energy content in the presence of a catalyst capable of causing substantial complete conversion of said photo-isomer without the addition of external heat, to a liquid isomer of lower energy content with the release of substantial heat of deisomerization, and removing the converted isomer through a separating device, in which method the catalyst is selected from Cobalt (II) porphyrine, elemental iodine and the trigonal prismatic complex, $[(CF_3)_2C_2S]_3$ Mo.

4,424,806

AUTOMATED VENTILATION, CPR, AND CIRCULATORY ASSISTANCE APPARATUS

Bill H. Newman, Bothell, and Clifton A. Alferness, Woodinville, both of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Mar. 12, 1981, Ser. No. 243,196

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—28 **42 Claims**

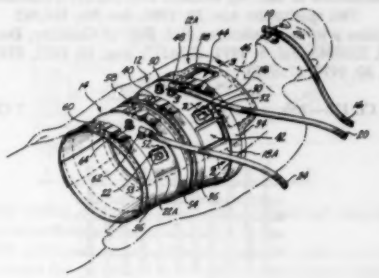
1. An apparatus for assisting and reproducing the pulmonary and cardiac functions of a patient, said apparatus comprising:

an airway apparatus constructed so as to be placed during use in proximity to the patient's airway to provide fluid communication with the patient's lungs;

a vest constructed so as to be secured during use about the portion of the patient's body in the region of the thorax, said vest including an inflatable bladder that overlies the patient's chest;

an abdominal restraint constructed so as to be secured during use about the portion of the patient's body immediately below the thorax, said abdominal restraint including an inflatable bladder that overlies the patient's abdomen; and,

control means that is in fluid communication with said airway apparatus, said vest bladder, and said abdominal



restraint bladder, said control means being operable to alternately inflate and deflate, in substantial synchronism, said vest bladder, said abdominal restraint bladder, and the patient's lungs through said airway apparatus.

4,424,807

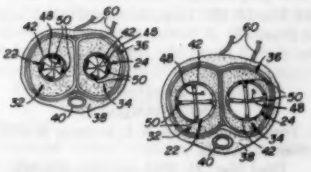
PENILE IMPLANT

Alvin S. Evans, Sr., 234 Shubert Ave., Runnemede, N.J. 08078

Filed Oct. 20, 1981, Ser. No. 313,114

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—79 **5 Claims**



1. A method of simulating a natural erection in a penis having coprora cavernvosa bounded by an envelope of fibrous tissue expandable to a predetermined maximum size, whereupon said envelope encompasses a first predetermined volume when said penis is flaccid, said corpora cavernvosa being expandable wherein said envelope encompasses a second predetermined volume when said penis is hard and erect, with the limit of said expanision of said corpora cavernosa being said second predetermined volume and being established by the maximum expansion of said fibrous tissue, each of said corpus cavernvosum having a passageway formed therein, said method comprising the steps of:

(1) implanting in the passageway of each corpus cavernvosum a hollow, enclosed bladder, each bladder having an access port in communication with the interior thereof and formed of a membrane of thin, flexible material,

(2) connecting said access ports to a source of fluid,

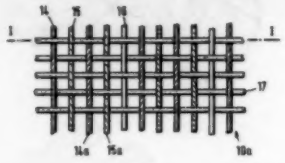
(3) directing fluid through said access ports from said fluid source to said bladders to inflate said bladders from said flaccid state to a third predetermined volume, said third predetermined volume being less than the maximum volumetric capacity of said bladders so as not cause the respective bladder membranes to undergo tension, while being sufficiently great to cause said corpora cavernosa to expand so that said fibrous tissue encompasses said second predetermined volume to cause said fibrous tissue to become tense and said penis to become erect and hard.

4,424,808

WIDE BANDAGE FABRIC

Ewald Schäfer, Wolfstein, and Harald Jung, Kreimbach, both of Fed. Rep. of Germany, assignors to Karl Otto Braun KG, Wolfstein, Fed. Rep. of Germany

Continuation of Ser. No. 845,655, Oct. 26, 1977, abandoned.
This application Apr. 30, 1980, Ser. No. 144,982
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656043; Jul. 5, 1977, 2730277; Aug. 18, 1977, 2737268; Aug. 30, 1977, 2738933
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 7 Claims



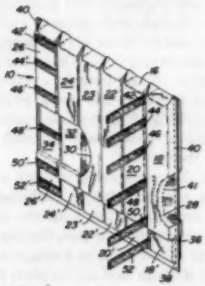
1. In wide bandage fabric consisting essentially of warp threads and weft threads extending in directions transversely to each other, the improvement comprising that said fabric is highly longitudinally elastic at least in the direction of one of said threads and easily tearable at least in the direction of the other of said threads and that at least one of metal oxides and metal salts (**18**) are incorporated into the fabric which is highly longitudinally elastic in one of the warp and the weft direction and easily tearable in the other direction with said weft threads (**17**) consisting of at least one of cotton, staple fiber, cotton/staple fiber and polyurethane, and rubber and with said warp threads (**14**, **14***a*, **15**, **15***a*, **16**) consisting of at least one of cotton and staple fiber.

4,424,809

KNEE BANDAGE

Robert A. Yovankin, Medford, N.J., assignor to KCP Bandage, Inc., Pennsauken, N.J.

Filed Mar. 31, 1982, Ser. No. 364,044
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—165 9 Claims



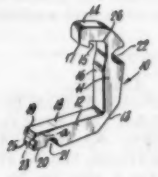
1. A knee bandage comprising an enclosure of stretch fabric having stitching defining a plurality of parallel elongated pockets, a pad of foam polymeric plastic material in each pocket, the pads adapted to be on opposite sides of a knee having a zone of reduced cross-sectional area at a location intermediate their ends, at least one of said pads which is adapted to be adjacent a rear surface of the knee having a zone of reduced cross-sectional area, said zones being co-extensive, a plurality of straps along one side edge of the bandage for mating with straps along the opposite side edge.

4,424,810

PLASTIC LIGATING CLIPS

Stephen J. Jewusiak, Denville, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Mar. 16, 1981, Ser. No. 244,436
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—326 10 Claims



1. A sterile, hemostatic clip for application using a clip applying instrument, said instrument including means for gripping and manipulating said clip, said clip comprising:

first and second leg members joined at their proximal ends by resilient hinge means and terminating at their distal ends in latch means, each leg member having an outer surface and a vessel clamping inner face in opposition to the vessel clamping inner face of the other leg member;

said first leg member terminating at the distal end thereof in latch means comprising a deflectable hook member extending from the inner face of said leg member, said hook member having an inner face spaced from and substantially parallel to the inner face of said leg member, said leg member including a substantially semi-cylindrical indentation extending across the width of the leg member on the outer surface thereof and spaced from the proximal end thereof;

whereby said first leg member is allowed to move with respect to said instrument means for gripping and manipulating said clip as the clip is being closed;

said second leg member terminating at the distal end thereof in latch means comprising a surface adapted to deflect said hook member and enter said space between the inner face of said hook member and the inner face of said first leg member, said second leg member including a substantially semi-cylindrical indentation extending across the width of the leg member on the outer surface thereof and spaced from the distal and proximal ends thereof, whereby said second leg member is allowed to move with respect to said instrument means for gripping and manipulating said clip as the clip is being closed; said indentation on said second leg member being spaced from the distal end of said leg member by a distance corresponding to the length of the inner face of the hook member;

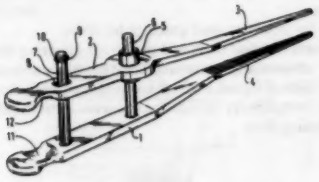
the indentations of said first and second leg members being spaced equidistantly from said hinge means;

whereby said clip may be applied using a clip applying instrument which instrument grips the clip using the indentations in said leg members and applies the clip to the vessel to be closed by pivoting said first and second leg member about said hinge means to close said clip causing the distal end of said second leg member to deflect and engage the hook member of the first leg member to lock the clip in a closed position.

4,424,811
PINCHING DEVICE FOR SURGICAL PURPOSES

Gerrit S. Groot, No. 13, Nobeldreef, 2871 LA Schoonhoven, Netherlands

Continuation of Ser. No. 147,187, May 6, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,664
Claims priority, application Netherlands, May 7, 1979, 7903570
Int. Cl.³ A61B 17/12
U.S. Cl. 128—346 9 Claims



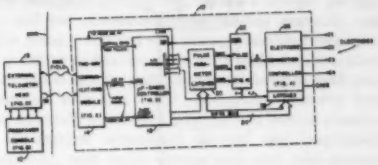
1. A surgical clamp comprising, in combination:
a pair of elongate supporting parts disposed in spaced opposition and a pair of jaw elements disposed in parallel opposition, each jaw element merging with one end of a corresponding supporting part; and
means for freely guiding said jaw elements for manual movement toward and away from each other and for frictionally holding the jaw members clamped upon an anatomical member such as a blood vessel with and in response to a pressure which has been manually established while allowing subsequent manual release of such frictional holding without first closing the jaw elements further, said means comprising a circular pin anchored to and upstanding from one of said supporting parts and passing through the other supporting part, an elongated, circular sleeve carried by said other supporting part and through which said pin passes with a minor amount of clearance, said sleeve having mutually inwardly facing inner surfaces, one adjacent each of its opposite ends, which frictionally engage and hold onto said pin due to slight relative tilting between said sleeve and pin caused by the pressure exerted by said jaw elements on the anatomical member, and a second upstanding pin anchored on one of said supporting parts and passing through an opening in the other part for preventing relative rotation of the parts about the axis of the pin first mentioned while permitting said slight relative tilting, said supporting parts having portions on that side of said first pin remote from said jaw elements which are spaced apart from each other sufficient in that region adjacent said sleeve and even when the jaw elements are engaged together to permit insertion of a finger therebetween to allow said sleeve to be forcibly slid along said first pin despite said frictional engagement and thereby allow the frictional holding between said first pin and said sleeve to be released without first closing the jaw elements further.

4,424,812
IMPLANTABLE EXTERNALLY PROGRAMMABLE MICROPROCESSOR-CONTROLLED TISSUE STIMULATOR

Alan F. Lesnick, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Oct. 9, 1980, Ser. No. 195,665
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 24 Claims

1. An implantable tissue stimulator, comprising
at least one stimulation electrode
a digital data processor including stored program means containing program instructions and processing means with command outputs and an interrupt request input for fetching and executing instructions from said stored program means, said stored program means containing means defining instructions for causing said processing means to generate a pulse command output in response to an interrupt request,



pulse timing means for producing an interrupt request at predetermined intervals, and
pulse generator means responsive to said pulse command output for applying a corresponding stimulation pulse to said electrode.

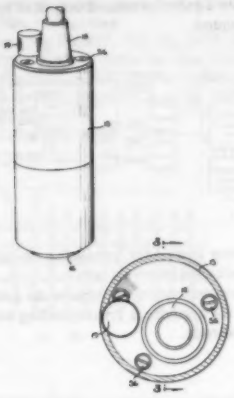
4,424,813
MULTI-MODE ULTRASOUND SCANNER

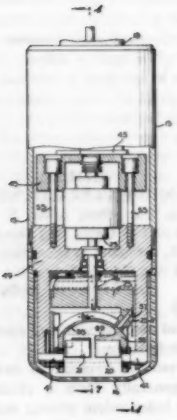
James F. Havlice, Los Altos; Albert S. Waxman; Henry L. Schwartz, both of Los Gatos, and David E. Stepner, Cupertino, all of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Filed Aug. 14, 1981, Ser. No. 292,948
Int. Cl.³ G01N 29/04
U.S. Cl. 128—660 5 Claims

1. An ultrasound medical scanning apparatus comprising:
a hand-holdable housing;
a pair of ultrasound transducers having faces together shaped to generally form a circle, said transducers mounted for independent pivotal movement within said housing about a common axis;
a motor;
coupling means for coupling one of said transducers to said motor for pivoting said transducer in oscillating motion about said axis comprising:
a flywheel driven by said motor;
an eccentrically mounted pin extending from said flywheel;
a pivotally mounted rocker member to which said one transducer is affixed, said member including a curved slot; said pin cooperatively engaging said slot so as to convert the rotational movement of said flywheel into said oscillatory movement;
first position detection means coupled to said one transducer for providing signals representative of the position of said one transducer, said first detection means being disposed within said housing;
manual positioning means for manually pivoting the other of said transducers about said axis;
second position detection means coupled to said other transducer for providing signals representative of the position of said other transducer, said second detection means being disposed within said housing;
a fluid chamber within said housing enclosing said transducers; and,
a membrane for contacting a body defining a part of said

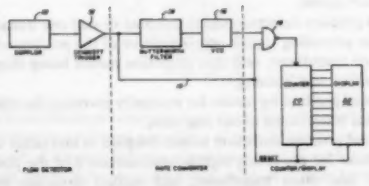
chamber such that ultrasound from said transducers passes through said membrane into the body,





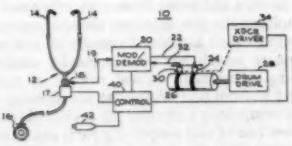
whereby a multi-mode, hand-holdable ultrasound apparatus is realized.

4,424,814
PERFUSION RATIO DETECTOR
Jeffrey Secunda, 44 Harold St., Sharon, Mass. 02067
Filed Mar. 30, 1981, Ser. No. 249,071
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **10 Claims**



1. A perfusion ratio detector comprising;
means for detecting blood flow through the body including non-invasive ultrasonic detection means adapted for contact with the patient's skin about a pressure point of the body,
means coupled from said detecting means for providing a pulse signal the duration of which is representative of flow period,
rate converter means coupled from said detection means responsive to the flow period signal and including means for providing a cyclic signal of frequency greater than the rate of the flow period pulse signal,
gate means for receiving said flow period and cyclic signals to provide a gated pulse train representative of perfusion ratio,
means for counting said gated pulse train,
and means coupled from said means for counting for displaying, substantially instantaneously upon occurrence of said flow period signal, a visual indication of perfusion ratio so as to immediately inform the observer as to the efficacy of perfusion flow.

4,424,815
STETHOSCOPE-TYPE RECORDING SYSTEM WITH STRETCHED-IN-TIME PLAYBACK
David H. Kuntz, 11810 Bel Ter., Los Angeles, Calif. 90049
Filed Oct. 14, 1980, Ser. No. 196,469
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—715 **18 Claims**



1. Apparatus for reproducing sounds stretched-in-time comprising:
sound transducer means for picking up audible sounds and generating corresponding electrical signals;
means for processing said electrical signals to develop a selected sequence of sample signals;
means for recording the selected sample signals in a storage medium at a first rate;
means for reproducing the same sample signals from the storage medium at a second rate which is slower than the first rate;
means for regenerating an audible signal from the reproduced signals, which audible signal contains the frequency characteristics of the original audible sounds, including original pitch, but stretched-in-time; and
selectively actuable control means coupled to control the recording means and the reproducing means to operate at different rates.

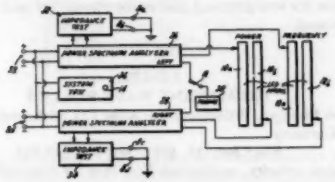
4,424,816
NEUROLOGICAL MONITORING DEVICE TEST CIRCUITRY
Alfred S. Callahan, Mobile, Ala.; James S. Rhodes; Timothy L. Johnson, both of Wellesley, Mass., and John G. Durden, Lawrenceville, Ga., assignors to Neurologics, Inc., Nashville, Tenn.
Filed Apr. 29, 1981, Ser. No. 258,587
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—731 **8 Claims**

1. Apparatus comprising a device for monitoring brain wave signals detected by at least one electrode adapted to be placed on a patient's head, said brain wave signals having known frequency and amplitude ranges, and circuitry for use with said

device for detecting impedance properties of at least one current path on said patient's head, said circuitry comprising:

means for applying a time varying signal having an amplitude and frequency substantially greater than said known amplitude and frequency ranges to said at least one electrode, a first portion of said time varying signal flowing into said at least one current path on said patient's head, and a second portion of said time varying signal being injected into said device;

amplifier means for amplifying said second portion of said time varying signal to produce a first voltage proportional to the amplitude of said second portion of said time varying signal;



means for providing a second voltage of predetermined amplitude;

differential amplifier means receiving at a first input said first voltage, and at a second input said second voltage, for producing an output voltage proportional to the difference of said first and second voltages, and

indicator means responsive to the voltage level of said output voltage for providing an indication of the impedance properties of said at least one current path,

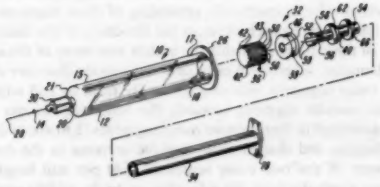
whereby the impedance properties of said at least one current path can be monitored concurrently with the use of said device for monitoring brain wave signals.

4,424,817

SYRINGE WITH MEANS FOR AUTOMATICALLY SEALING A BLOOD SAMPLE WITHIN THE SYRINGE

Charles D. Williams, Rolling Hills Estate, Calif., assignor to Marquest Medical Products, Inc., Englewood, Colo.

Filed Jul. 1, 1981, Ser. No. 279,441
Int. Cl.³ A61B 5/14
U.S. Cl. 128—766 **13 Claims**



1. A syringe device for obtaining a blood sample comprising in combination:

a tubular body having an interior surface defining a bore, said tubular body having an opening at a rearward end thereof and an end wall at a forward end thereof, said end wall having connection means for connecting a needle to the tubular body;

a sliding assembly slideably received within said opening in slideable engagement with the interior surface of said tubular body with means for providing a seal between said sliding assembly and said tubular body, said sliding assembly having at least one longitudinal passageway and at least one radial passageway, said longitudinal passageway in fluid communication with said radial passageway, said radial passageway extending radially inward to a preselected position, said radial passageway being contiguously adjacent to said means for providing a seal so that, regardless of the position of the syringe device when obtaining a blood sample, virtually no gas will be present adjacent to said radial passageway for movement back into the collected blood sample;

a hollow elongated plunger rod having a plunger passageway, said rod connected to said sliding assembly, said hollow plunger rod and said sliding assembly being movable to define an interior chamber in said bore for collecting the blood sample, said plunger rod being in fluid communication with said radial passageway whereby fluid communication is provided between said interior chamber and the ambient atmosphere through said longitudinal passageway, said radial passageway, and said plunger passageway; and

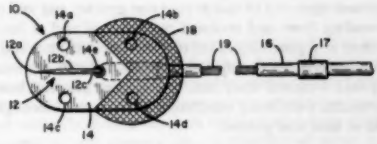
means associated with one of said passageways for allowing the passage of air and restricting the passage of blood along said passageways.

4,424,818

ELECTRICAL LEAD AND INSERTION TOOL

John Doring, Spring Lake Park, and Rodney Amundson, Lindstrom, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 18, 1982, Ser. No. 349,726
Int. Cl.³ A01N 1/00
U.S. Cl. 178—784 **14 Claims**



1. An insertion tool for use with a body implantable lead of the type comprising:

an elongated lead body having a proximal end and a distal end, further comprised of an elongated insulative sheath and an elongated electrical conductor, having a proximal end and a distal end, fixedly mounted within said elongated insulative sheath;

means attached to said conductor near the distal end of said lead body for fixing said body implantable lead to body tissue; and

flexible base means attached to said lead body near the distal end of said lead body which, in a relaxed state, is disposed over said fixation means from at least one direction and which, upon application of a small amount of force, may be bent back exposi said fixation means from said at least one direction;

said insertion tool comprising an inserter body having:

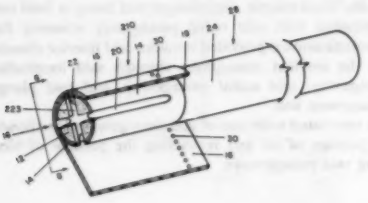
first engageable means for releasably engaging said flexible base means; and

second engageable means for releasably engaging said lead body at an angle relative to said flexible base means when said flexible base means is engaged by said first engageable means for bending back said flexible base means and exposing said fixation means from said at least one direction.

4,424,819
CIGARETTE FILTER

Donald A. Silberstein, LeMans, France, and Andrew McMurtrie, Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Mar. 31, 1982, Ser. No. 364,113
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 11 Claims



1. A filter for a cigarette comprising:

a porous filter rod of generally cylindrical configuration;

an air impermeable wrapper extending longitudinally along said filter rod from one end thereof to the other end and circumscribing said rod leaving flow-through opposed ends of said filter rod;

said wrapper being formed with at least one groove embedded into said filter rod, said at least one groove being open at one end of said filter rod and extending therefrom in a generally longitudinal direction of said filter rod for a distance less than the length of said filter rod, and the open end of said at least one groove being recessed a predetermined distance inwardly of the end of said filter rod;

means defining at least one cavity formed in the end of said filter rod, said at least one cavity being open to the end of said filter rod and being in air flow communication with said recessed open end of said at least one groove, and said cavity extending from said recessed open end of said at least one groove in a generally radial direction of said filter rod; and,

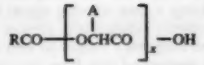
tipping material extending longitudinally of and circumscribing said wrapped filter rod, said tipping material being air permeable permitting ventilating air flow therethrough into said at least one groove.

4,424,820
HAIR STRAIGHTENING COMPOSITIONS CONTAINING FATTY ACID LACTYLATES AND GLYCOLATES AND THEIR METHOD OF USE

David W. Cannell, Los Angeles, and Geoffrey R. Hawkins, Granada Hills, both of Calif., assignors to Redken Laboratories, Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 118,231, Feb. 4, 1980, Pat. No. 4,301,820. This application Feb. 2, 1981, Ser. No. 230,754
The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.
Int. Cl.³ A45D *7/04*; A61K *7/09*
U.S. Cl. 132—7 49 Claims

1. In an aqueous composition for the straightening of hair which contains a hair reactant for straightening hair, selected from the group consisting of at least one reducing agent for hair and sodium hydroxide, wherein the improvement comprises having in the composition for straightening hair at least one humectant compound selected from the group consisting of fatty acid lactylates and fatty acid glycolates of the formula:

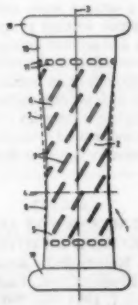


wherein RCO is an acyl radical of a fatty acid having from about 6 to about 22 carbon atoms, A is CH_3 or H, and x has a value of from about 1 to about 4, and ammonium, alkali metal and amine salts thereof; the total amount of humectant compound included in said composition being sufficient to impart to hair, straightened using the composition, a higher degree of straightening as compared to hair straightened using the composition for straightening hair in the absence of said humectant compound.

4,424,821
PERMANENT WAVE ROLLER

Joseph Bündgen, Wilhelmshöher Allee 273, 35 Kassel, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,762
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006459
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—40 13 Claims



1. A permanent wave roller having a rotationally symmetrical winder rod or winder tube and a hair clamp, the winder rod or winter tube, respectively, consisting of three segments that are contiguous to each other in the direction of the rotational axis, of these three segments the middle one being of the smallest diameter, whereas in each case the outside diameter of the two outer segments increases gradually from its end adjacent to the middle segment towards the adjoining winder end, characterized in that the two outer segments (5,6) are of different lengths and that in each case the increase in the outside diameter of the two outer segments (5,6) per unit length increases gradually from the side adjacent to the middle segment (4) to the adjoining winder end such that the maximum outside diameter of the two outside segments (5,6) is at the most approximately 8 mm greater than the outside diameter of the middle segment (4).

4,424,822
ROLLER CLIP STRUCTURE

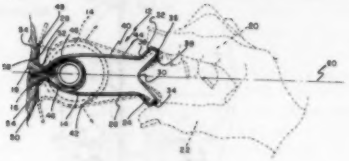
Harold A. Wilborn, II, 8442 Mt. Vernon Ct., Wichita, Kans. 67207

Filed Oct. 5, 1981, Ser. No. 308,438
Int. Cl.³ A45D *8/00*
U.S. Cl. 132—46 A 5 Claims

5. A roller clip structure adapted to hold a cylindrical roller member against a person's hair; comprising:

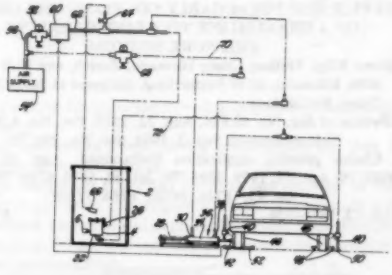
(a) an actuator head member;

(b) a main body assembly having first and second leg members connected to said actuator head member;
(c) said first and second leg members each having a main body section integral with an arcuate connector section;
(d) a stabilizer assembly connected to said first and second leg members;
(e) said stabilizer assembly having first and second foot members extending in opposite directions in a common plane, each having a support portion adapted to compress a portion of a person's hair against the person's scalp;
(f) said main body sections extended in spaced, parallel



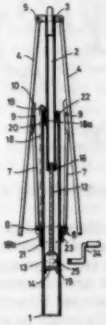
planes; and whereby said actuator head member is operable to spread apart said first and second leg members for clamping the roller member between said arcuate connector sections;
(g) said first and second foot members each having an arcuate connector portion connected between respective ones of said first and second leg members and said support portions; and
(h) said support portions extended in the common plane which is generally perpendicular to the spaced, parallel planes of said main body sections for support and stability purposes.

4,424,823
TIRE SPRAY CLEANING SYSTEM
Harry Gougoulas, 24167 Ecorse, Taylor, Mich. 48180
Filed Jun. 28, 1982, Ser. No. 393,017
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—45 **7 Claims**



1. A system for spray cleaning tires of vehicles traveling along automatic car wash lines comprising: a reservoir for cleaning fluid, a cleaning fluid discharge container in fluid communication with the reservoir, a tire spray cleaning nozzle for spraying cleaning fluid onto vehicle tires, a cleaning fluid supply line through which cleaning fluid can flow from the cleaning fluid discharge container to the spray cleaning nozzle, a source of pressure, pressure control means activated when vehicle tires are in position to be sprayed which connects the cleaning fluid discharge container with the source of pressure to cause cleaning fluid to flow from the cleaning fluid discharge container through the cleaning fluid supply line to the tire spray cleaning nozzle, and a floating valve means responsive to the flow of fluid from the cleaning fluid discharge container to the tire spray cleaning nozzle to prevent the cleaning fluid supply line from being purged of cleaning fluid.

4,424,824
GARDEN AND MARKET UMBRELLA
Klaus Becher, Dieringhausen, Fed. Rep. of Germany, assignor to Becher Textil- und Stahlbau GmbH, Dieringhausen, Fed. Rep. of Germany
Filed Jul. 20, 1982, Ser. No. 400,145
Int. Cl.³ A45B *19/04*
U.S. Cl. 135—20 M **6 Claims**



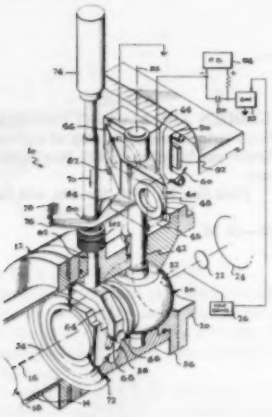
1. An umbrella comprising a support tube having an uppermost end portion, an umbrella shaft being telescopically disposed in and reciprocally movable relative to said uppermost end portion, a plurality of cover ribs pivotally connected to said umbrella shaft, a sleeve in external telescopic sliding relationship to said support tube, a plurality of struts pivotally connected between said sleeve and associated ones of said cover ribs, control means for effecting interdependent relative movement of said umbrella shaft, support tube and slider during relative opening and closing of said umbrella through movement of said cover ribs and struts, said control means including means for imparting simultaneous movement to said umbrella shaft outwardly of said support tube and downward movement of said sleeve away from support tube uppermost end portion to move said umbrella from an open to a closed position, said control means being further operative for imparting simultaneous movement to said umbrella shaft inwardly of said support tube and upward movement of said sleeve towards said support tube uppermost end portion to move said umbrella from a closed to an open position, flexible means for connecting said sleeve to said umbrella shaft, said movement imparting means including a threaded spindle threaded to a threaded nut, said threaded spindle being disposed at least in part within said umbrella shaft, said threaded nut being fixed to said umbrella shaft, pulley means carried by said support tube upper end portion for guiding thereover said flexible means, said flexible means being an elongated flexible member having opposite ends, means for connecting one of said flexible member ends to said sleeve, means for connecting another of said flexible member end to said umbrella shaft, and said flexible member being the sole flexible member of said control means.

4,424,825

FAST CLOSING VALVE

Clark L. Hanson, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,397
Int. Cl.³ F16K 5/20, 31/04
U.S. Cl. 137—1 9 Claims



8. A method for rapidly closing a conduit, comprising the steps of:

activating an electrical mechanism for rapidly rotating a ball valve member from a first position wherein a bore therein is aligned with the conduit to a position wherein the bore is out of alignment with the conduit;

maintaining a seal member between the conduit and valve member and flexibly sealed to said conduit, but with the seal member spaced from the valve member during rotation of the valve member away from said first position;

activating stored energy means operatively connected to said seal member and to said electrical mechanism for shifting said seal member against said valve member only after said valve member has rotated so its bore is substantially out of alignment with said conduit;

said step of rapidly rotating a valve member including electrically discharging a capacitor through at least one coil to rotate an arm fixed to the valve member and lying adjacent to said coil; and

said step of shifting said seal member including releasing a catch to allow said stored energy means to rapidly move the seal member.

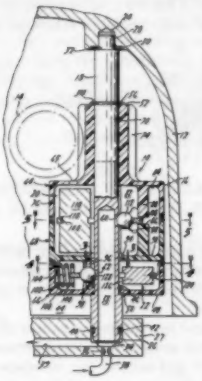
4,424,826

FLYWEIGHT GOVERNOR

Uno Kuusik, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 17, 1982, Ser. No. 349,542
Int. Cl.³ G05D 13/42
U.S. Cl. 137—54 9 Claims

1. A fluid pressure governor device for supplying a fluid pressure proportional to speed comprising a rotatable shaft, an axial passage formed in said shaft, a source of fluid pressure for said axial passage; an inlet passage in said shaft connecting said source to said axial passage, an outlet passage connecting said axial passage to exhaust having seat means for a relief valve member therein such that said valve member is movable between an outer open and an inner closed seated position for controlling flow from said axial passage to exhaust, said valve member biased by fluid pressure in said axial passage towards its outer open position, the improvement comprising housing means supported concentrically on said shaft for rotation therewith, said housing means operative for supporting a flyweight yoke assembly for rotation therewith in a plane normal to the axis of rotation of said shaft, said yoke assembly including a yoke member having a central opening for receiving said shaft therethrough, said opening adapted at one end for retaining with said shaft a weight member and adapted at its other end for retaining with said housing means said valve member, said yoke operative for predetermined movement in said plane



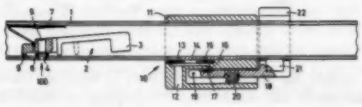
such that its center of mass remains substantially coincident with the shaft axis of rotation, said housing means including yoke assembly engaging means causing said yoke assembly to rotate in unison with said housing means, said weight member operative during increasing rotational speed of said shaft to move radially outwardly under centrifugal force to gradually urge said valve member radially inwardly towards its seated position to prevent flow of the fluid from said axial passage to exhaust.

4,424,827

DEVICE FOR DETACHABLY COUPLING THE ORIFICE OF A BRANCHLINE TO A LINE CARRYING A PRESSURE MEDIUM

Bruno Kägi, Meilen; Georg Hirmann, Zürich, and Rolf Luginbühl, Küsnacht, all of Switzerland, assignors to Bachofen AG, Uster, Switzerland

Division of Ser. No. 68,614, Aug. 22, 1979, Pat. No. 4,296,774. This application Sep. 2, 1981, Ser. No. 298,721
Claims priority, application Switzerland, Aug. 25, 1978, 9003/78; Apr. 17, 1979, 3595/79; Jul. 20, 1979, 6788/79
Int. Cl.³ F16L 29/00; F16K 31/08
U.S. Cl. 137—320 3 Claims



1. A device for detachably coupling an orifice of a branchline to a conduit carrying a pressure medium and having a plurality of discharge valves disposed spaced apart from each other along said conduit, said coupling device being movably mounted at said conduit so as to be movable over the length of the conduit and having said orifice and having means for opening said discharge valves thereon, said discharge valves being mounted in said conduit and having magnetically actuated opening means, said coupling device being provided with a coupling element guided on said conduit and having coupling

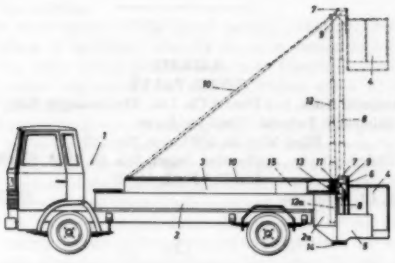
means for automatically sealing in the coupling position with the discharge valve at the pressure side for an automatic alignment with the orifice, and said opening means includes actuating means which magnetically cooperate with said opening means of said branchline without physically contacting the same and which are operatively connected with said coupling means, said actuating means further including a pivot lever which supports a closing member, and said actuating means also comprising a pressure key for actuating said pivot lever to relieve pressure between the coupling device and the conduit via the closing member to enable the coupling device to move along the conduit.

4,424,828

VEHICLE FOR SERVICING AIRCRAFT

Hans Zellinger, Rosenau 16, A-4271 St. Oswald/Freistadt, and Fritz Zellinger, Gschwand 279, A-4810 Gmunden, both of Austria

Filed Dec. 16, 1981, Ser. No. 331,157
Claims priority, application Austria, Dec. 24, 1980, 6311/80
Int. Cl.³ F17D 1/00
U.S. Cl. 137—342 17 Claims



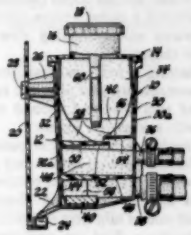
1. In a vehicle for use in the servicing of aircraft, comprising:
a chassis,
a body comprising a tank having a top spaced less than 2 meters above the ground,
a cage comprising a working platform and disposed on the rear of said body and adapted to assume a position of rest in which the top of said cage is substantially flush with the top of said body, said cage being adapted to be raised from said position of rest,
a hydraulic cylinder-piston unit carried by said chassis and operable to raise said cage from said position of rest, and
a conduit, which communicates with the interior of said tank and has an upper and which is adapted to be raised and is disposed within reach of the hands of a person standing on said platform,
the improvement residing in that
said cylinder-piston unit is vertical and disposed in front of said cage and comprises a telescopic piston, which is connected at its top end portion to said cage and is adapted to be upwardly extended, and
a spring is provided, which is connected at one end to the top end portion of said piston and at another end to said body near the forward end thereof and is arranged to counteract the eccentric load applied to said cylinder-piston unit by said cage when said piston is extended.

4,424,829

VEHICLE FLUID POWER SYSTEM RESERVOIR

Donald L. Millington, Farmington Hills, and Gerald A. Nyquist, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 12, 1982, Ser. No. 367,456
Int. Cl.³ E01B 11/00
U.S. Cl. 137—590 4 Claims



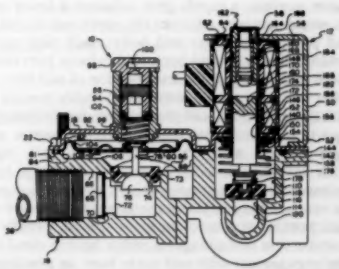
1. A small volume, low turbulence reservoir for a hydraulic power system comprising, a vessel having a first wall defining an inlet opening therein on an axis, a wall opposite said first wall generally perpendicular to said axis extended and subjected to high velocity fluid flow from said inlet, an outlet in said vessel body, a first baffle extending between said vessel walls and separating said inlet and said outlet, said first baffle having a main web generally centered on a plane through said axis and terminating with turned lateral flanges each located substantially away from said outlet, and a second baffle above said inlet having a main web disposed generally parallel the web of the first baffle terminating with turned lateral flanges outside the first baffle flanges generally parallel with and overlapping same to define therewith fluid flow redirection channels, whereby high velocity fluid entering from said inlet flows in directions laterally of the inlet axis and through said flow redirection channels enabling lower velocity mixing with the body of fluid contained in said vessel in regions spaced from said outlet.

4,424,830

GAS VALVE

Preston R. Arnsperger, and John J. Love, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 16, 1981, Ser. No. 331,144
Int. Cl.³ F23N 5/00
U.S. Cl. 137—613 4 Claims



1. In a gas valve,
a pressure regulator;
two solenoid operated valves;

a valve body comprising a casting selectively cored and machined to effect a desired gas outlet direction;

said casting having a pressure regulator chamber;

said casting having first and second core chambers spaced from each other and from said pressure regulator chamber;

each of said first and second cored chambers having a bottom wall and a cored gas passageway extending downwardly from said bottom wall;

one of said first and second cored chambers being selectively cored to provide a cored recess spaced from said cored gas passageway and extending downwardly from said bottom wall thereof;

said casting having a first gas passageway selectively machined for connecting said pressure regulator chamber to the other of said first and second cored chambers not provided with said cored recess;

said casting having a second gas passageway selectively machined for connecting said cored gas passageway extending downwardly from said bottom wall of said other of said first and second cored chambers to said cored recess of said one of said first and second cored chambers;

said casting having a third gas passageway selectively machined for connecting said cored gas passageway extending downwardly from said bottom wall of said one of said first and second cored chambers to a gas outlet means; and

said solenoid operated valves being adapted to control flow of gas out of said first and second cored chambers.

4,424,831

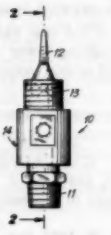
VALVE CONSTRUCTION HAVING ENHANCED DUTY CYCLE

William P. Nugent, So. Salem, N.Y., assignor to Pneumadyne, Inc., Croton Falls, N.Y.

Filed Jul. 7, 1981, Ser. No. 281,032

Int. Cl.³ F16K *11/14*

U.S. Cl. 137—627.5 **1 Claim**



1. A three way valve member comprising a valve body having an axially extending guide bore including an enlarged diameter portion, a supply port adjacent a lower end of said body, an exhaust port adjacent the upper end of said body, and a load port intermediate said body, each said port being in communication with said bore, said exhaust port communicating with said enlarged diameter portion of said bore, a plunger member mounted in said bore and shiftable toward and away from said supply port, said plunger member including a peripheral portion spaced from said bore, spring means urging said plunger member away from said supply port, said plunger member including an axially extending discharge bore having a downwardly directed open mouth at the lower end thereof and a vent aperture adjacent the upper end thereof above said exhaust port, a plurality of mutually spaced, radially extending fin members on said plunger member having distal portions in sliding engagement with said guide bore, an annular seal member interposed between said guide bore and the periphery of said plunger member at a heightwise location above said fin members and defining a slidable seal between said plunger member periphery and guide bore at a position below said vent aperture, a guide head member on said plunger member at a position above said annual seal member, said guide head member being guided for movement axially of said bore by sliding engagement with said enlarged diameter portion of said bore, the undersurface of said head member and enlarged diameter portions of said bore defining a chamber communicating with said vent aperture and said exhaust port, a resilient valve seal disposed in said supply port, said seal including a seal surface having portions yieldably urged into blocking position of said supply port, and actuator means for shifting said plunger member between first, second and third progressively lower operative positions within said guide bore, said plunger member, in said first position, defining a flow path between said intermediate and exhaust ports downwardly through the spaces between said fin members, upwardly through said discharge bore, and outwardly through said vent aperture, said plunger member in said second position having said mouth portion in sealing engagement with surfaces of said valve seal whereby all flow between said ports is blocked, said plunger member in said third operative position unseating said valve seal from said supply port while maintaining said mouth in sealing engagement with said seal surface, thereby to communicate said supply and intermediate ports via a flow path extending through the spaces between said fin members and the space between said guide bore and the periphery of said plunger member, the force require to move said plunger member from said second to said first position being supplied, at least in part, by the pressure of air emerging from said intermediate port, entering said chamber, and bearing against said undersurface of said head member.

4,424,832

PINCH VALVE

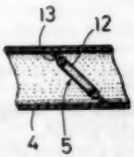
Kazutoshi Koda, c/o Danrei Co. Ltd., Osakasangyo Bldg. 10-2, Shinmachi 1-chome, Nishi-ku, Japan

Filed May 26, 1981, Ser. No. 267,278

Claims priority, application Japan, Jun. 18, 1980, 55-83340

Int. Cl.³ F16L *11/00*

U.S. Cl. 137—844 **13 Claims**



1. A pinch valve comprising:

a hollow, compressible tubular member;

annular rib formed on the inner walls of said tubular member, said annular rib lying in a plane oblique to a plane passing through the radial cross-section of said tubular member; and,

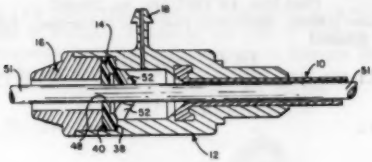
choking means for selectively compressing said tubular member at a portion thereof where said annular rib is formed on said inner walls of said tubular member, whereby said tubular member is sufficiently compressed, portions of said tubular member immediately upstream and downstream of said annular rib engage opposed respective portions of said annular rib to prevent fluid flow through said tubular member.

13. The pinch valve of claim 1 including tensioning means for urging said choking means into a position for fully choking flow through said tube at less than a predetermihed pressure whereby fluid is permitted to flow through said tube when pressure therein exceeds said predetermined pressure.

4,424,833
SELF SEALING GASKET ASSEMBLY

Kenneth A. Spector, Framingham, Mass.; Wilfred Samson, Santa Clara, Calif., and Richard M. DeMello, Falmouth, Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 2, 1981, Ser. No. 307,888
Int. Cl.³ A61M 5/00, 25/00
U.S. Cl. 137—849 8 Claims



1. A self-sealing gasket assembly to permit a tube to be inserted into or withdrawn from a housing while maintaining the interior of the housing under seal comprising:

a one-piece disc-shaped gasket having an outer sealing portion, an inner sealing portion and a peripheral sidewall portion connecting the inner and outer sealing portions, the inner, outer and sidewall portions being constructed and arranged so that the inner and outer sealing portions are spaced from each other;

an aperture formed in the outer sealing member;

means defining at least one slit in the inner sealing portion of the member;

the inner portion of the gasket having a shoulder formed about its periphery whereby the more central region of the inner sealing member defines an inwardly-extending central plug portion, said slit being formed within the plug portion;

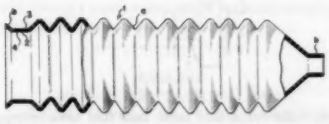
a housing to receive the sealing member, the housing including an inner bore and an outer bore, the outer bore being larger than the inner bore and defining a shoulder at the juncture of the inner bore and the outer bore, the shoulder in the housing being constructed and arranged to receive the shoulder formed about the periphery of the inner sealing portion of the gasket and to peripherally constrain said plug portion thereby to provide support for said plug portion and the periphery of the gasket; and

means for securing the periphery of the gasket against the shoulder of the housing.

4,424,834
ELASTIC SHAPED ARTICLE

Takehiko Sumi, Yamato; Masao Harada, Sagamihara, and Yoshikazu Iwaya, Yamato, all of Japan, assignors to Kyoraku Co., Ltd., Kyoto, Japan

Filed Sep. 22, 1982, Ser. No. 421,336
Int. Cl.³ D03D 21/00, 35/00; B32B 27/40, 27/06
U.S. Cl. 138—121 16 Claims

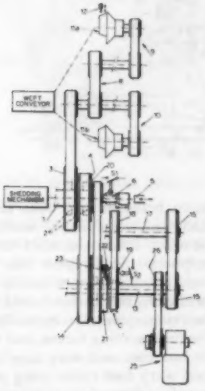


1. An elastic shaped article of a laminated construction of at least two layers, comprising (a) a layer of soft polyvinyl chloride incorporating 30 to 220 parts by weight of a plasticizer per 100 parts by weight of polyvinyl chloride having an average polymerization degree of 800 to 12,000 and (b) a layer of at least one thermoplastic elastomer selected from the group consisting of polyester type elastomers, polyurethane type elastomers and polyamide type elastomers.

4,424,835
WEAVING ERROR CORRECTION DEVICE FOR SHUTTLELESS WEAVING MACHINE

Harry Wagenmakers, Deurne, Netherlands, assignor to Ruti-Te Strake B.V., Netherlands

Filed Oct. 26, 1981, Ser. No. 315,132
Claims priority, application Netherlands, Oct. 28, 1981, 8005904
Int. Cl.³ D03D 51/08
U.S. Cl. 139—1 E 3 Claims



1. A shuttleless weaving machine having a shedding mechanism, a weft conveyor for launching a weft thread through a weaving shed provided by the shedding mechanism, a plural weft preparation device for delivering weft threads according to a repeating pattern to the weft conveyor, and a disconnectable coupling between the plural weft preparation device and the shedding mechanism, wherein the improvement comprises an angular position comparator which includes a part coupled to the shedding mechanism and a part coupled to the plural weft preparation device, said parts assuming a marked angular position relative to each other during normal operation while rotating through 1/(an) revolution per weaving cycle (a=-number of wefts after which the weft pattern is repeated, and n=number of marked angular positions), means for detecting such marked relative angular position of the two parts, said means operating, while such position is not detected, to disconnect said coupling, and an auxiliary motor connected to the plural weft preparation device, for driving said device and the part of the comparator coupled thereto to bring said part to a marked angular position relative to said other part.

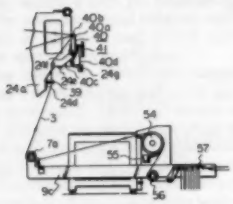
4,424,836
WARP TENSION REGULATING AND WARP FEED APPARATUS IN CIRCULAR LOOM

Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 202,447, Jul. 2, 1980. This application Feb. 24, 1983, Ser. No. 469,575
Claims priority, application Japan, Nov. 29, 1978, 53-148530
Int. Cl.³ D03D 37/00
U.S. Cl. 139—13 R 5 Claims

1. A warp tension regulating and warp feed apparatus for a circular loom comprising an annular guide member for guiding at least one shuttle, a shuttle propelling mechanism for propelling the shuttle in a certain direction along said guide member, a warp guide annular member disposed above said annular

guide member and coaxially therewith, said warp guide annular member having a plurality of warp guide slits, a plurality of shed forming mechanisms arranged annularly outside said warp guide annular member, operating means for operating said shed forming mechanisms prior to arrival of said shuttle to form successive sheds, a take-up mechanism for taking up a formed weave fabric along the axis of the annular shuttle guide member and at least one source for feeding warps to the shed forming mechanisms comprising; means for absorbing variations of tensions created on said warps caused mainly by the shedding motion, a continuously rotating warp feed roller



disposed at a position between said warp tension variation absorbing means and said warp supply source, drive means including an electric motor for continuously rotating said warp feed roller at a peripheral speed higher than the warp consumption speed of said circular loom, whereby the rate of feed of said warp is controlled by the tension in said warp, provided by said tension absorbing means for controlling the tension upstream of said tension absorbing means, and means for guiding said warps taken out from said warp supply source to said warp feed roller, said warp feed roller being provided with a cylindrical friction-surface formed on a cylindrical peripheral surface thereof for guiding said warps.

4,424,837

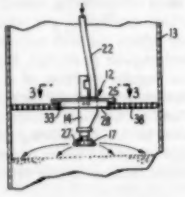
MOUNTING DEVICE FOR PARTICULATE MATTER LOADER

Thomas R. Farrell, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 7, 1981, Ser. No. 309,484

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—284 **9 Claims**



1. A device for mounting a catalyst oriented packing loader for loading a particulate medium into a vessel through a central axial accessway in the vessel, the loader comprising a carriage on which is fixedly supported a particulate medium distributor and a funnel that is connected to the source of the medium for feeding the medium onto the distributor, said device comprising a rigid collar that:

(a) includes means for fixedly securing the collar in a predetermined location above the accessway;

(b) has a substantially planar bottom surface that provides a level mating surface with a planar portion of the vessel that surrounds and defines the accessway; and

(c) has a top surface that provides a seat for the loader carriage and has loader positioning means that cooperates with the loader carriage to positively fix the position of the carriage relative to the collar and to center the distributor in the accessway at a predetermined axial position.

4,424,838

ARRANGEMENT FOR PROTECTION OF METAL SURFACES AGAINST CORROSION

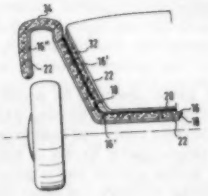
Fritz Noack, Ganghoferstr. 12, D-8942 Ottobeuren, Fed. Rep. of Germany D-8942

Filed Mar. 12, 1982, Ser. No. 236,497

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006908

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—325 **11 Claims**



1. An arrangement for producing and regenerating a protective fluid film on corrodible metal plate surfaces of automobiles, at least one main tube and a plurality of branch tubes connected to the main tube to form a manifold, a supply fitting mounted to the main tube to permit supply of anticorrosive fluid to the manifold, the plurality of branch tubes distributed over the metal plate surfaces and fixed thereon, each one of said plurality of branch tubes having a plurality of longitudinally spaced small outlet openings for passing anticorrosive fluid out of the manifold, further comprising a layer of an absorbent material covering the metal plate surfaces, and wherein the outlet openings of each one of the plurality of branch tubes open into said layer.

4,424,839

INLET FOR A FUEL TANK

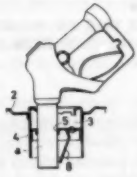
Junji Otani, Omiya, and Noriyasu Matsuhashi, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 228,929, Jan. 21, 1981, abandoned. This application Mar. 18, 1983, Ser. No. 478,834

Claims priority, application Japan, Jan. 22, 1980, 55-5455; Jan. 25, 1980, 55-7062

Int. Cl.³ B67C *3/30*

U.S. Cl. 141—348 **4 Claims**



1. A fuel inlet for a fuel tank, said fuel tank comprising a saddle form tank having an middle upwardly concave bottom portion, said inlet comprising:

a tubular member extending through an upper wall of said tank centrally thereof and rigidly supported thereby; and

a baffle plate located within said tubular member and extending transversely thereof, the baffle plate having an opening sized to accept a fuel nozzle of a determined diameter

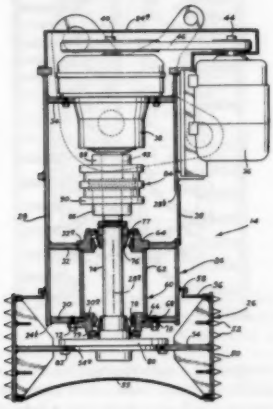
and reject a fuel nozzle of a diameter larger than said determined diameter, and having a plurality of apertures located laterally of and symmetrically surrounding said opening permitting viewing of the tank interior, said apertures being insufficient in cross-sectional area to accommodate the passage therethrough of a conventional fuel nozzle.

4,424,840

ROLLER FEED DEVICE WITH BEARING CARTRIDGE

Ronald D. Pousette, Vancouver, and John L. Sanders, North Vancouver, both of Canada, assignors to Brunette Machine Works Ltd., New Westminster, Canada

Filed Feb. 16, 1982, Ser. No. 348,993
Int. Cl.³ B27L *1/00*; B27B *31/00*
U.S. Cl. 144—246 F **2 Claims**



1. A roller feed device comprising:
an elongated arm having an inner mounting end, an outer roll-carrying end and a long axis between said ends,
means mounted on said arm adjacent its outer end defining a first opening,
a drive train including a drive shaft mounted on said arm, adjacent said inner end, for powered rotation about the arm's long axis,
means mounted on said arm defining a second opening intermediate said outer end and said drive shaft,
a bearing cartridge comprising a casing having an outer end portion releasably secured to said means defining said first opening, an inner end portion disposed within said second opening in clearance fit therewith, a cartridge shaft, and bearing means rotatably mounting said cartridge shaft on said casing,
coupling means secured to said cartridge shaft, drivingly coupling the same with said drive shaft, and
a feed roll mounted on said cartridge shaft for rotation therewith,
said openings being sized for accommodating axial passage of said casing's inner end portion and said coupling means therethrough.

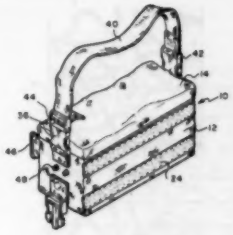
4,424,841

MODULAR STACKING BAG

J. Rudy Smith, 243 Harvard Ave., Collingswood, N.J. 08108

Filed Sep. 30, 1982, Ser. No. 432,087
Int. Cl.³ A45C *1/00*
U.S. Cl. 150—33 **3 Claims**

1. A modular stacking bag comprising:
a substantially rectangularly shaped container member having an open top;
a cover for said container member, said cover member being pivotally connected to the back of said member and being adapted to cover said open top;
a plurality of snap elements carried by each of the opposed end walls of said container member;
first and second type complementary spring clip members, said first type clip member being secured to one end wall and said second type clip member being connected to the other end wall, each of said clip members extending upwardly so as to be accessible from the upper part of said container member;



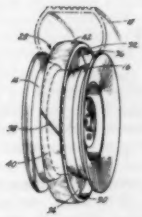
a strap, said strap having another first type spring clip member at one end thereof and another second type spring clip member at the other end thereof whereby the clip members on said strap may be releasably coupled to the respective complementary clip members on said container member to function as a carrying strap for said bag.

4,424,842

VEHICLE WHEEL HAVING SAFETY TREAD

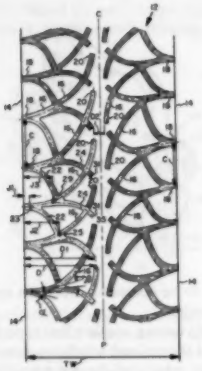
Francois P. Trebaol, 6113 Piedmont Ave., Los Angeles, Calif. 90042

Continuation-in-part of Ser. No. 268,862, Jun. 1, 1981, abandoned. This application Jul. 12, 1982, Ser. No. 397,211
Int. Cl.³ B60C *17/00*
U.S. Cl. 152—158 **8 Claims**



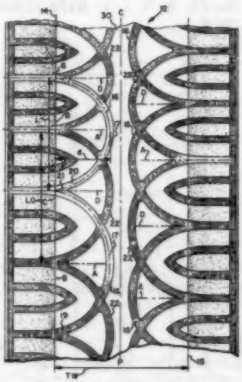
1. A vehicle wheel adapted to receive a pneumatic tire, the wheel comprising:
a first circular wheel half having an inside part of a rim adapted to receive a pneumatic tire;
a second circular wheel half having an outside part of the rim;
an annular tread having a larger diameter than the rim and a central axis, the tread being divided circumferentially into two parts interfacing with each other on a bias so they can be brought together and separated by relative movement having a component transverse to the central axis, one part of the tread being secured to the first wheel half and the other part of the tread being secured to the second wheel half; and
means for releasably securing the wheel halves together.

4,424,843
PNEUMATIC TIRE TREAD
Jean F. L. Fontaine, Bürden, Luxembourg, and Maurice Graas, Schockville, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 17, 1982, Ser. No. 358,943
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R 19 Claims



1. A pneumatic radial passenger tire having a tread portion provided with a pair of tread edges spaced apart axially of the tire, the tread portion being provided with a plurality of main grooves associated with each tread edge, each of the main grooves following substantially identical paths, each of said main grooves having an axially outer end which opens outwardly of the associated tread edge and an axially inner end which terminates at a distance from said associated tread edge of at least forty percent (40%) of the tread width, the main grooves at their associated tread edges being spaced apart in a direction circumferentially of the tire a distance between twenty percent (20%) and forty percent (40%) of the tread width, the main grooves associated with any one tread edge extending from the axially outer end thereof in a generally curvilinear path axially inwardly and circumferentially of the tire with the main grooves associated wth any one tread edge extending in the same direction circumferentially of the tire, the center of curvature of each main groove being disposed on the side thereof facing in the direction of the respective associated tread edge, each main groove having a first branch and a second branch extending therefrom in a generally opposite circumferential direction from that which said main grooves extend, each first branch extending from its main groove towards and terminating in communication with the next circumferentially adjacent groove, the juncture of said first branch and its main groove being spaced from the associated tread edge a distance of between zero percent (0%) and ten percent (10%) of the tread width TW, the juncture of each first branch and the next circumferentially adjacent main groove being spaced from the associated tread edge a distance of between fifteen percent (15%) and thirty percent (30%) of the tread width, each second branch extending from its main groove past the next circumferential adjacent main groove towards at least and in close proximity with the second next circumferential main groove but not past the second next circumferentially adjacent main groove, the juncture of each second branch and its respective main groove being spaced from the associated tread edge a distance of between ten percent (10%) and thirty percent (30%) of the tread width, the axially inner end of each said second branch being spaced from its associated tread edge a distance of at least forty percent (40%) of the tread width, the included angle formed between the centerline of each main groove and the centerline of its first branch at the juncture thereof being no greater than about 30 degrees, the included angle formed between the centerline of each main groove and the centerline of its second branch at the juncture thereof being no greater than about 30 degrees, the main grooves, first branches and second branches providing the majority of grooves in the tread.

4,424,844
TIRE TREAD
Jean F. L. Fontaine, Bürden, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 17, 1982, Ser. No. 358,944
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R 9 Claims

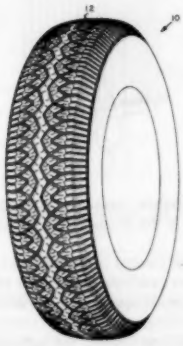


1. A tire comprising a ground-engaging tread portion having a pair of axially opposed tread edges characterized by said ground-engaging tread portion having a set of circumferentially adjacent grooves extending from each of said respective tread edges across the axial width of said tread a distance of at least twenty-five percent (25%) of the tread width, each of said grooves having a pair of ends at said tread edge and a pair of circumferentially spaced branches, said branches extending from each of said ends, respectively, meeting at a common point, each of said grooves generally following an elliptical path having one axis which is generally perpendicular to the mid-circumferential centerplane of the tire and a second axis which is substantially parallel to said mid-circumferential centerplane of said tire, said second axis being spaced from the tread edge from which said grooves start a distance not greater than one-eighth (⅛) of the width of said tread portion, said circumferentially adjacent grooves are disposed about said tire so that the center line of each branch is substantially tangent to the center line of the branch of the next circumferentially adjacent groove in the area of said tread portion closely adjacent said tread edge.

4,424,845
PNEUMATIC TIRE TREAD
Andre E. J. Baus, Bettembourg; Jean F. L. Fontaine, Bürden, both of Luxembourg, and Maurice Graas, Schockville, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 17, 1982, Ser. No. 358,945
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R 9 Claims

1. A pneumatic radial passenger tire having a ground-engaging tread portion having a pair of axially opposed tread edges, said tread portion comprising a pair of substantially sinuous parallel central grooves being disposed in the central portion of the tire such that one of said grooves is disposed on each side

of the mid-circumferential centerplane of said tire, each of said grooves having a plurality of axially inner peaks which alternate with axially outer peaks with respect to the mid-circumferential centerplane of said tire, said pair of central grooves are spaced an axial distance apart so as to provide a centrally located rib which extends about the circumference of said tire, said rib having a cross-sectional width in the range of 5% to 15% of the width of said tread, each of said central grooves having an amplitude in the range of 5% to 15% of the width of said tread portion and a longitudinal repeating frequency in the range of 40% to 60% of the width of said tread, disposed axially outward of each of said grooves is an intermediate



generally sinuous groove which extends about the circumference of said tire, each of said intermediate grooves having a plurality of axially inner peaks which alternate with axially outer peaks, each of said intermediate grooves having a longitudinal repeating frequency such that every other axially inner peaks of said intermediate groove coincides with circumferentially adjacent axially outer peaks of said grooves in the central portion of said tire to define spaced intermediate projections, said intermediate groove having an amplitude in the range of 10% to 25% of the width of said tread, extending from each of said axially outer peaks of each of said intermediate grooves is a substantially axially extending groove which extends outward to the closest respective tread edge.

4,424,846

TREAD CONFIGURATION FOR PNEUMATIC VEHICLE TIRES

Hans Seitz, Langenhagen; Heinz-Dieter Rach, Garbsen; Henner Pieper, and Udo Frerichs, both of Langenhagen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,413

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137334

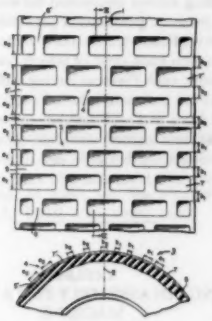
Int. Cl.³ B60C *11/06, 11/08*

U.S. Cl. 152—209 R **8 Claims**

1. A tread configuration for the radially outwardly located peripheral surface of a pneumatic vehicle tire used as a spare tire to replace a regular tire that went flat, for example, said tread configuration comprising in combination:

transverse ribs respectively extending transverse to the circumferential direction of said tire; and

circumferential ribs respectively extending in the circumferential direction of said tire and interconnecting said transverse ribs in such a way as to define a plurality of separate essentially rectangular depressions therewith, the larger dimension of each of said depressions extending transverse to the circumferential direction of said tire; with the narrower dimension of each of said transverse and circumferential ribs being approximately ¼ to ⅓ of the circumferential dimension of an adjacent depression, the number of said transverse and circumferential ribs being such that, when viewed in the circumferential direction of said tire, several depressions are disposed next to one another, and a plurality of depressions are disposed one after the other; said peripheral surface of said tire being divided into at least two segments; within a given segment, the circumferential dimension of said depressions is constant, and the circumferential dimension of said transverse ribs is constant, while the circumferential dimension of said depressions, and the circumferential dimension of said transverse ribs of a given segment differ from those of a successive segment so that there is attained advantageously the production of more noise and a greater number of noise tones of specific frequency during operation, which affects the ear of the driver and is particularly uncomfortable at high speeds, and as a result, the driver is induced to slow down, and to replace the spare tire, which was mounted when the regular tire went flat, for instance, as soon as possible with a regular tire.



4,424,847

SPACE SAVE SPARE TIRE

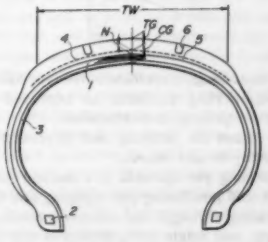
Yoichi Kitazawa, Higashiyamato, and Naoki Yamazaki, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,963

Claims priority, application Japan, Oct. 15, 1979, 54-141331

Int. Cl.³ B60C *9/20, 19/12*

U.S. Cl. 152—352 R **6 Claims**



1. A space saving spare tire comprising; a pair of bead portions, a toroidal carcass reinforcement extending across said bead portions and composed of a plurality of rubberized bias laid plies comprising textile cords inclined at an angle between 20° and 50° to the circumferential direction of the tire and

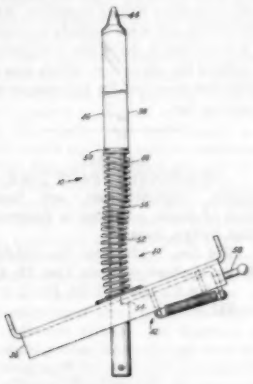
crossed between adjacent plies, a tread disposed about the crown portion of said carcass, and an air impermeable inner liner layer laminated to the inner surface of said carcass, said tread having a relatively thin thickness which is substantially the same as a thickness of said carcass inclusive of said inner liner layer, and said spare tire being substantially equal in outer diameter but smaller in width compared with tires normally used on vehicles and said spare tire being usually stored in the vehicles under an inflated condition with an extremely high internal pressure applied therein, an internal pressure penetration preventive cord layer and a cushion rubber layer, said cushion rubber layer having a gauge which is at least equal to that of a coating rubber interposed between the carcass plies, said internal pressure penetration preventive cord layer composed of conventional textile cord material such as nylon, polyester or rayon each cord of which consists of a bundle of 2 to 20 filaments, each filament having a diameter in the range of 0.01 mm to 0.5 mm, said internal pressure penetration preventive cord layer and said cushion rubber layer being interposed between said carcass and said tread and said cushion rubber layer interposed between said internal presure penetration preventive cord layer and said carcass.

4,424,848

POSITIONING PIN ASSEMBLY FOR A TIRE CHANGING MACHINE

Dennis L. Gore, Nashville, and Dennis H. Patterson, Murfreesboro, both of Tenn., assignors to Sun Electric Corporation, Crystal Lake, Ill.

Filed Feb. 1, 1982, Ser. No. 344,647
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.28 **5 Claims**



1. In a tire changing machine of the type having a chassis and a wheel-supporting platform, an improved positioning pin assembly comprising, in combination:

frame means for securing said improved positioning pin assembly to said chassis;

a positioning pin operable in a latched state and a biased state, said positioning pin engaging said frame means and extending through said wheel-supporting platform to a height, said height being greater in said biased state;

spring means for biasing said positioning pin into said biased state; and

latch means for releasably retaining said positioning pin in said latched state against the bias of said spring means;

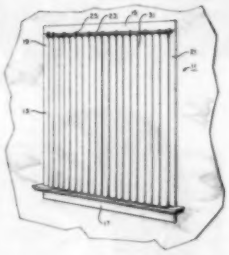
whereby said height of said positioning pin above said wheel-supporting platform is selectively adjustable.

4,424,849

INTERIOR WINDOW COVERING

Johnye M. Robertson, 5108 S. Colony Blvd., The Colony, Tex. 75056

Filed Dec. 21, 1981, Ser. No. 332,753
Int. Cl.³ A47H *1/00*
U.S. Cl. 160—124 **2 Claims**



1. An interior window covering adapted to be supported adjacent a window in the manner of a vertical blind, comprising:

an inner fabric panel located proximate said window;

an outer fabric panel overlaying said inner fabric panel on the side of said inner panel opposite said window, said inner and outer panels providing a solid fabric construction adapted to reduce convective heat transfer through said cocerning, said outer panel being secured to said inner panel by a series of vertical spaced-apart sewn seams, whereby a series of vertical pockets is formed between said inner and outer panels;

a plurality of metal slats disposed within said vertical pockets and extending substantially the entire length of said vertical pockets, each of said slats being separated from the next adjacent slat by one of said vertical seams to allow collapsing of said window covering by folding said seams to form a stack of said vertical pockets; and

each of said slats having a concave surface and an opposite light reflective convex surace, said slats being inserted into said vertical pockets with said concave reflective surfaces facing said inner fabric panel, thereby creating an air space between said inner fabric panel and said slats, whereby said slat reflective surfaces provide reduced radient heat transfer and said air space provides reduced conductive heat transfer through said covering.

4,424,850

SECURITY PROOF SHUTTER

Emil Klein, 103-25 - 68 Ave., Apt. 3H, Forest Hills, N.Y. 11375

Filed Feb. 28, 1980, Ser. No. 125,477
Int. Cl.³ E06B *9/16, 7/086;* E05F *15/20*
U.S. Cl. 160—133 **17 Claims**

1. A security proof shutter structure comprising a plurality of slats, a plurality of linkage means, a left and right hand vertical channel means, an upper rolling means, a pulling means; the upper part of each of said linkage means firmly secured to respective ends of said slats, the upper and lower end of each of said linkage means formed as an S-shaped spring hook, said lower hook of each of said linkage means being engaged with said upper hook of the adjacent linkage means to provide a hooked linkage of rotative operation between said adjacent slats without fixed attachement, the shape of said hooked linkage adapted to independently install or remove anyone slat on shutter site and to independently actuate by sliding the progressive closing or opening of the louvre spacing up to anyone pair of adjacent slats, said slats are supported by sliding on opposite ends within said respective vertical

channels, said pulling means adapted to actuate the sliding of said plurality of slats downwardly or upwardly within said

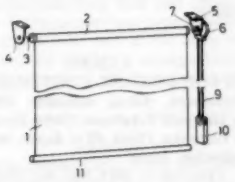
vertical channel means and to actuate the winding of said slats around said upper rolling means.

4,424,851

SCREEN-OPERATING DEVICE FOR USE IN A ROLLER BLIND

Hiroyuki Kohayakawa, Tokyo, Japan, assignor to TOSO Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,462
Claims priority, application Japan, Jan. 8, 1981, 56-532[U]
Int. Cl.³ E06B *9/208*
U.S. Cl. 160—298 **5 Claims**



1. A screen-operating device for use in a roller blind comprising:

a screen-roll;

a screen wound on said screen-roll;

a pair of brackets disposed a predetermined distance with respect to each other to form a space therebetween;

a pivot-shaft integrallly coupled with said screen-roll and being rotatably mounted within said space formed between said brackets;

a cord-pulley rotatably mounted outside one of said brackets at a distance displaced from said screen-roll;

actuating means being interposed between said pivot-shaft and said cord-pulley for selectively transmitting rotation from said cord-pulley to said screen-roll and for selectively braking rotation of said screen-roll;

said actuating means comprising:

a brake drum being secured to one of said brackets;

a coil spring being disposed in close proximity to an outer surface of said brake drum;

a disk including a sleeve portion, said disk being loosely mounted on said coil spring and being coupled to said pivot-shaft;

an inner tung formed on said cord-pulley and said sleeve portion of said disk including an opening formed therein for loosely mating with said inner tung;

said coil spring having opposite ends thereof inserted in said opening and being individually separated by said tung in said opening;

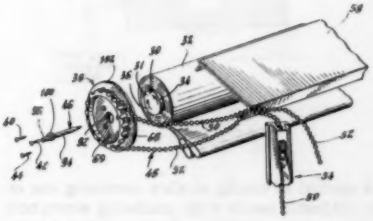
a pulley cover being adjustably mounted relative to said bracket for selectively changing the relative position thereof when said brackets are mounted on either a vertical or horizontal wall surface.

4,424,852

BEAD-CHAIN DRIVE SYSTEM FOR A WINDOW SHADE

Thomas P. Hopper, P.O. Box 689, R.F.D. #1, Durham, Conn. 06422

Filed Sep. 29, 1980, Ser. No. 191,406
Int. Cl.³ E06B *9/20*; F16G *15/00*
U.S. Cl. 160—309 **24 Claims**



18. A retainer for a bead-chain having beads spaced apart by links, a length of said chain extending along the retainer and being urged in one direction relative thereto, said retainer comprising:

an elongate body having

a floor;

elongate side walls projecting from said floor and together therewith defining an elongate channel having an opening opposite at least a portion of said floor;

a top wall segment extending between said side walls at a location spaced from said floor to form a passage to direct said chain length along said channel; and

a plurality of pairs of ribs, one rib in each pair extending from one side wall and the other rib in each pair extending from the other side wall and both ribs in each pair extending at an oblique angle with respect to the longitudinal axis of said channel, one of said pairs of ribs extending a greater distance than the others of said pairs of ribs, each of said pairs of said ribs defining a space therebetween, for accommodating a link of the bead chain and thereby comprising means operative to hold at least one of the beads of said length against movement in said one direction, said opening of said channel enabling movement of said length in an opposite direction to disengage said length from said holding means;

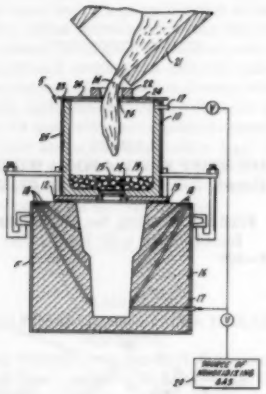
said one of said pairs of ribs comprising said holding means further being operative upon release of said chain length with movement of said length in said one direction to engage one bead of the chain length and guide other beads into engagement with the others of said pairs of ribs thereby stopping further movement of the chain length.

4,424,853

FOUNDRY PRACTICES

Igor Y. Khandros, Hoboken, and Bruce A. Heyer, Mahwah, both of N.J., assignors to Abex Corporation, New York, N.Y.

Continuation of Ser. No. 230,614, Feb. 2, 1981, abandoned. This application Jan. 6, 1983, Ser. No. 455,985
Int. Cl.³ B22D *1/00*
U.S. Cl. 164—57.1 4 Claims



1. A method of casting an alloy combining one or more readily oxidizable metals while precluding atmospheric oxygen when casting and wherein alloying of the base alloy with the oxidizable metal takes place in an alloying chamber moments before castings, comprising:

(a) providing a mold with a casting cavity having means for venting for the escape of air contained therein and communicating with a supply passage through which a non-oxidizing gas may be admitted to the mold cavity;

(b) positioning an alloying chamber adjacent to the mold cavity, the alloying chamber having a pouring opening in its bottom communicating with the mold cavity, isolating the alloying chamber from the atmosphere with a removable cover having vent passages for the escape of air and having a pouring opening at its top;

(c) closing the bottom pour opening of the alloying chamber with a plug to isolate the pouring chamber from the mold cavity and disposing in the pouring chamber an unmelted oxidizable metal;

(d) admitting the non-oxidizing gas to the mold cavity and to the pouring chamber in an amount to displace air therein and, after the air has been so displaced, pouring a body of molten metal from a ladle through the pouring opening at the top of the alloying chamber to impinge atop the oxidizable metal in the alloying chamber, the poured body of metal having a melting point higher than that of the oxidizable metal thereby quickly melting the oxidizable metal and creating the casting alloy in the alloying chamber; and

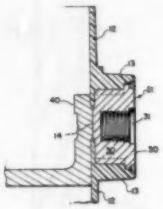
(e) disclosing the bottom pour opening shortly after the oxidizable metal has been alloyed with the molten metal poured into the alloying chamber whereupon the alloyed metal flows into the casting cavity, thereby displacing the protective atmosphere through the vent passage while concurrently preventing the intrusion of air into the casting cavity.

4,424,854

SIDE TERMINAL LEAD ALLOY PRODUCT AND PROCESS

Ralph G. Tiegel, San Carlos, Calif., assignor to Tiegel Manufacturing Company, Belmont, Calif.

Filed Nov. 10, 1981, Ser. No. 319,919
Int. Cl.³ B22D *25/04*
U.S. Cl. 164—98 4 Claims



1. A method for forming a side terminal in a storage battery, said method comprising the steps of:

(a) providing a battery case having at least one terminal cavity on a side wall thereof and projecting therefrom and at least one opening positioned within said terminal cavity and through said side wall;

(b) providing a lead alloy comprising: 10 wt-% brass; 3 wt-% antimony; and remainder substantially lead;

(c) providing from the alloy of step (b) at least one integrally cast terminal member receivable within said terminal cavity, said terminal member having a first portion dimensioned to complement said opening and a second portion, opposite said first portion, defining a threaded core; and

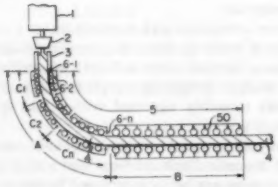
(d) positioning said terminal member in said terminal cavity with said first portion adjacent to and extending towards said opening and said second portion extending away from said opening.

4,424,855

METHOD FOR COOLING CONTINUOUS CASTING

Osamu Tsubakihara, Sakai; Kazuhide Kameyama, Kawachinagano; Hideyuki Takahama, Ohita; Kuniaki Sakai, Ohita, and Akira Tsuneoka, Ohita, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Jul. 8, 1981, Ser. No. 281,508
Claims priority, application Japan, Jul. 10, 1980, 55-94194
Int. Cl.³ B22D *11/124*
U.S. Cl. 164—485 5 Claims



1. In a method for cooling a continuous casting while said continuous casting is being guided along a withdrawal path downstream of a continuous casting mold, the improvement comprising providing a cooling zone in a horizontal guide region downstream of a curved guide region of said withdrawal path, and spraying a gas-liquid mist onto a plurality of guide rolls in the horizontal guide region such that the gas-liquid mist adhering to the guide rolls evaporates prior to contacting said casting, to indirectly cool the casting so as to complete inner solidification of said casting at a high temperature.

4,424,856

ELECTROMAGNETIC STIRRING UNIT FOR CONTINUOUS STEEL CASTING MOULD

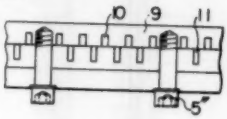
Susumu Onoda, Yawatahigashi; Haruo Kitamura, and Toshio Kikuchi, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 19, 1981, Ser. No. 235,881

Claims priority, application Japan, Feb. 23, 1980, 55-22647[U]; Feb. 23, 1980, 55-22648[U]

Int. Cl.³ B22D *11/10*

U.S. Cl. 164—504 2 Claims



1. In an electromagnetic stirring unit for a continuous steel casting mould of the type including a cooling wall constituting one or more of the walls of said casting mould for direct contact with molten steel at the outer side of said cooling wall, said cooling wall having cooling water passages at the inner side thereof; an electromagnetic stirring coil for electromagnetically stirring said molten steel; and a cooling box having therein a chamber for housing said electromagnetic stirring coil, a water supply chamber for supplying said cooling water passages with cooling water and a water discharge chamber through which said cooling water is discharged, said cooling box being connected to said inner side of said cooling wall to constitute said unit, the improvement comprising said chamber for housing said electromagnetic stirring coil being disposed at an upper part of said cooling box; said water discharge chamber being disposed under said chamber for housing said electromagnetic stirring coil; said water supply chamber being disposed under said water discharge chamber; a water discharge header communicating with said cooling water passages; and water discharge passages communicating at one end with said discharge header and at the other end with said discharge chamber, said discharge passages being formed in a front wall of said cooling box which contacts said inner side of said cooling wall.

4,424,857

METHOD FOR REVERSING TWO REGENERATORS

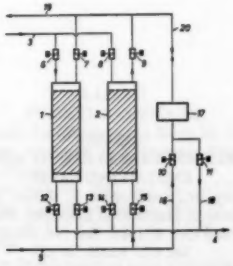
Gerhard Linde, Gruenwald, Fed. Rep. of Germany, assignor to Linde Aktiengeselischaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,419

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139153

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—1 10 Claims



1. In a method for the switching of two interchangeable and reversible regenerators, one of which has been heated by a hot fluid and the other of which has been cooled by a cold fluid, the improvement which comprises the steps of interrupting the feed of the cold fluid to the cooled regenerator and the feed of the hot fluid to the heated regenerator; switching valves so as to introduce the hot fluid into the cooled regenerator while simultaneously passing the cold fluid through a heat accumulator connected in parallel with the regenerators so as to obtain heated fluid; passing a minor portion of said heated fluid into the heated regenerator to flush out residual hot fluid therefrom; and subsequently passing the cold fluid in its entirety through the heated regenerator, said heat accumulator being contacted throughout said method by only the cold fluid in either its heated or ambient state.

4,424,858

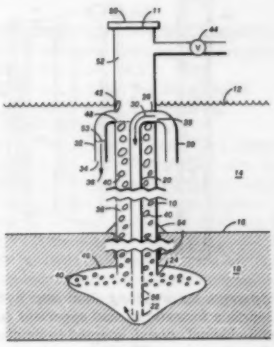
APPARATUS FOR RECOVERING GASEOUS HYDROCARBONS FROM HYDROCARBON-CONTAINING SOLID HYDRATES

Guy R. B. Elliott, Los Alamos; Bruce L. Barraclough, Santa Fe, and Nicholas E. Vanderborgh, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 235,775, Feb. 19, 1981, Pat. No. 4,376,462. This application Sep. 27, 1982, Ser. No. 424,691

Int. Cl.³ E21B *33/12, 36/00*

U.S. Cl. 166—52 6 Claims



1. A well apparatus for recovering gaseous hydrocarbons from a formation containing solid gas hydrates, comprising:

a first conduit means and a second conduit means, each having a bottom end and a top end;

wherein said first conduit means is located within said second conduit means so as to form a space located between said first conduit means and said second conduit means;

wherein said first conduit means and said second conduit means each have an open bottom end, and wherein the bottom end of said first conduit means extends to a lower depth than the bottom end of said second conduit means;

wherein said first conduit means is connected to said second conduit means and is in open communication with space exterior to said apparatus by means of a connector which connects the top end of said first conduit means to a first orifice located along the side of and near the top end of said second conduit means;

wherein said second conduit means has a second orifice located along the side of and near the top end of said second conduit means, and wherein there is a downwardly projecting sidearm attached to said second orifice: and

wherein said second conduit means is sealable at its top end and at its second orifice.

5. A well apparatus for recovering gaseous hydrocarbons

from a formation containing solid gas hydrates, comprising a first conduit means to be operated in cooperation with and spaced apart from at least one additional substantially similar second conduit means;

wherein said first conduit means has an open bottom end, has an adjustably sealable top and including a valve for removing produced gas from said first conduit, and has a side opening orifice near said top end to which a downwardly projecting substantially hollow sidearm is attached, and further including a plug for closing said side opening orifice temporarily.

4,424,859

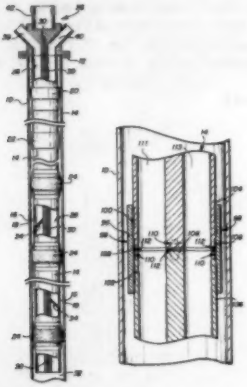
MULTI-CHANNEL FLUID INJECTION SYSTEM

Coleman W. Sims, P.O. Box 136, Boerne, Tex. 78006, and W. P. Sims, 10040 Woodgrove Dr., Dallas, Tex. 75218

Filed Nov. 4, 1981, Ser. No. 318,187

Int. Cl.³ E21B *33/124, 33/127, 41/00, 43/24*

U.S. Cl. 166—67 **1 Claim**



1. An apparatus for injecting fluid into hydrocarbon-containing subsurface formations, said apparatus comprising:

(a) A multi-channel conduit adapted to simultaneously transport fluid from a wellhead to a plurality of treatment zones within a wellbore;

(b) A wellhead fitting communicating with the multi-channel conduit, said wellhead fitting adapted to introduce fluid into at least two channels of said multi-channel conduit;

(c) Packing elements for confining fluid transported through each channel of said multi-channel conduit to a single treatment zone within the wellbore; and

(d) Back-off means positioned above each of said packing elements, said back-off means being adapted to disengage said multi-channel conduit from said packing element when subjected to a rotational shearing force less than the torsional stress required to permanently deform said multi-channel conduit.

4,424,860

DEFLATE-EQUALIZING VALVE APPARATUS FOR INFLATABLE PACKER FORMATION TESTER

Howard L. McGill, Lufkin, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 26, 1981, Ser. No. 266,899

Int. Cl.³ E21B *43/00*

U.S. Cl. 166—113 **16 Claims**

1. Valve apparatus adapted for use in connection with a downhole pump that supplies well fluids under pressure to inflatable packers to cause the same to expand and thereby isolate a well interval, comprising: telescopically arranged mandrel and housing assemblies movable between extended and retracted relative positions, said assemblies defining axially extending test and inflation passages; first valve means for communicating said test passage with the well annulus above said inflatable packers when said assemblies are in said extended relative position to maintain pressure equalization during packer element inflation; second valve means for communicating said inflation passage with the well annulus above said inflatable packers when said assemblies are in said extended relative position to enable packer element deflation; and third valve means responsive to the outlet pressure of said pump for preventing packer element deflation when said pump is being operated with said assemblies in said extended relative position even though said second valve means is open.

4,424,861

INFLATABLE ANCHOR ELEMENT AND PACKER EMPLOYING SAME

Ernest E. Carter, Jr., and Eugene E. Baker, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 8, 1981, Ser. No. 309,645

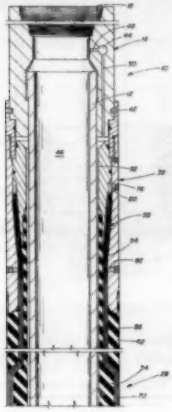
Int. Cl.³ E21B *33/127*

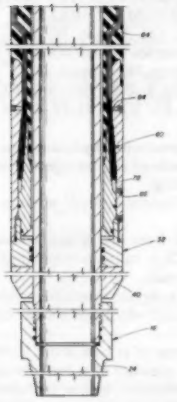
U.S. Cl. 166—120 **25 Claims**

19. An inflatable packer element comprising:

substantially tubular expandable and contractible bladder means; and

metal expandable and contractible anchor means surrounding said bladder means, said metal reinforcing means





comprising a plurality of metal cables laid in an unwoven manner in a plurality of distinct layers.

4,424,862

INJECTION DEVICES

Georges J. Munari, Le Chesnay, and Serge M. Perineau, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

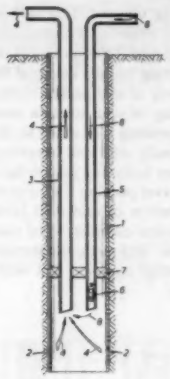
Filed Mar. 16, 1982, Ser. No. 358,729

Claims priority, application France, Mar. 19, 1981, 81 05482

Int. Cl.³ F21B *34/08, 37/06*

U.S. Cl. 166—168 **3 Claims**

1. An injection device adapted to be located at the lower end portion of an injection tube descending into a hydrocarbon-producing well, for introducing a liquid product, at a low flow rate, into the bottom of the well, said injection device comprising an injection valve member, and, coupled to the upper part of said injection member, at least one settling tank through



which liquid to be injected flows before arriving at said injection member.

4,424,863

OIL RECOVERY BY WATERFLOODING

James R. White, Washington Crossing, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 6, 1981, Ser. No. 308,958

Int. Cl.³ E21B *43/20, 43/24*

U.S. Cl. 166—268 **1 Claim**

1. In a method for the recovery of oil from a subterranean oil reservoir penetrated by spaced apart injection system and production system in which an aqueous liquid is injected into the reservoir via the injection system to displace oil to the production system, the improvement comprising dissolving molecular oxygen in the aqueous liquid being injected into the reservoir under pressure sufficient to maintain liquid phase oxidation at reservoir conditions, said pressure being sufficient to prevent said injected liquid from being converted to steam.

4,424,864

ISOLATION PLUG

Charles S. Logan, Lake Charles, La., assignor to Conoco Inc., Ponca City, Okla.

Filed Feb. 17, 1981, Ser. No. 234,900

Int. Cl.³ E21B *43/04*

U.S. Cl. 166—278 **23 Claims**

1. An apparatus for isolating an upper portion of a well bore from a lower portion of said well bore, comprising:

an annular packer means including a packer body having a longitudinal passageway disposed therethrough, and including an expandable packing element for sealing an annulus between said packer body and said well bore between said upper and lower portions of said well bore;

isolation means, connected to said packer body, for blocking said longitudinal passageway and thereby isolating said upper portion of said well bore from said lower portion of said well bore, said isolation means including:

a housing having a central bore communicated with said longitudinal passageway;

plug means disposed in said central bore for blocking said central bore and said longitudinal passageway;

releasable retaining means for retaining said plug means in said central bore and for subsequently releasing said plug means so that it may be displaced from said central bore to communicate said upper portion of said well bore with said lower portion of said well bore, said releasable retaining means including means for prevent-

ing release of said plug means due to fluid pressure variations within said longitudinal passageway of said packer body; and

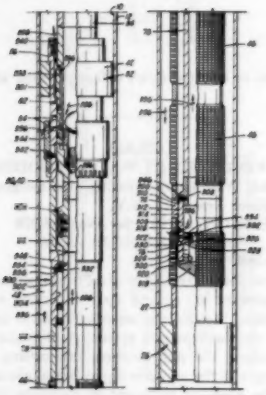
an isolation casing connected to said packer body, said isolation casing including a central cavity for receiving said housing of said isolation means therein;

an operating tool string initially disposed through said longitudinal passageway of said packer body; and

wherein said housing of said isolation means is initially attached to said operating tool string so that said housing is moved longitudinally with said operating tool string relative to said packer body and said isolation casing.

16. A method of gravel packing a zone of a well bore and of isolating an upper portion of said well bore from said zone located therebelow upon completion of said gravel packing operation on said zone, said method comprising the steps of:

setting an upper packer means in said well bore at an upper end of said zone;



gravel packing said zone by flowing a gravel slurry down a tubing string connected to a packer body of said upper packer means and through port means associated with said packer body into said zone;

blocking a longitudinal passageway of said packer body with a releasable isolation means prior to completely withdrawing said tubing string from said packer body;

closing said port means prior to completely withdrawing said tubing string from said packer body;

completely withdrawing said tubing string from said packer body, thereby communicating said longitudinal passageway of said packer body with said upper portion of said well bore; and

thereby isolating said upper portion of said well bore from said gravel packed zone so long as said longitudinal passageway remains blocked by said releasable isolation means.

4,424,865

THERMALLY ENERGIZED PACKER CUP

Donald G. Payton, Jr., Jackson, Miss., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,767

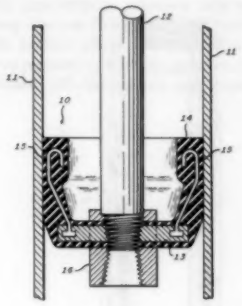
Int. Cl.³ E21B *33/12*

U.S. Cl. 166—302 **7 Claims**

1. A thermally energized packer cup comprising:

reinforcing means which is fabricated from a shape memory alloy that is cold worked into an original shape, constrained, heated to a transformation temperature, and cooled; and

a tapered elastomer body which is coupled to said reinforcing means,



said reinforcing means so constructed and arranged that said elastomer irreversibly is urged to expand when said means is thermally energized.

4,424,866

METHOD FOR PRODUCTION OF HYDROCARBONS FROM HYDRATES

Patrick L. McGuire, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 8, 1981, Ser. No. 300,337

Int. Cl.³ E21B *43/24, 43/26*

U.S. Cl. 166—303 **5 Claims**

1. A method of producing hydrocarbons from a hydrate formation after a spearhead as been injected into the formation, said method comprising:

(a) mixing a hot, "supersaturated" mixture comprising:

(1) water;

(2) salt selected from the group consisting of calcium chloride ($CaC1_2$), calcium bromide ($CaBr_2$), and mixtures thereof; and

(3) at least one polymer viscosifier which is compatible with said salt and which has a shear thinning rheology; and then

(b) injecting a volume of at least about 10,000 gallons of said mixture and at a pressure of at least about 1 psi per foot of depth of said formation below the earth surface into a well-bore having perforations located within a hydrate formation, so as to produce a controlled, massive hydrofracture in the formation extending at least about one hundred feet from said well-bore.

4,424,867

HEAT HARDENING SEALANT-GEL FOR FLEXIBLE COUPLINGS

William A. Mallow, San Antonio, Tex., assignor to Fiberglas Canada Inc., Canada

Filed Mar. 31, 1981, Ser. No. 249,629

Int. Cl.³ A62C *1/00*

U.S. Cl. 169—43 **26 Claims**

1. A method of imparting increased fire resistance to a partition in connection with passage of a conduit through an aperture in the partition, comprising the steps of

imbedding a rigid tubular sleeve in a partition to extend therethrough,

placing a conduit through said sleeve,

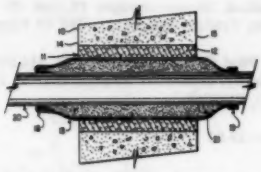
securing the ends of said sleeve to said conduit by means of flexible boots, and

filling said sleeve and boots with an intumescible thixotropic silicate slurry comprising an aqueous sodium silicate solution, a glycol, a polyvalent metal oxide or hydroxide, and a thixotropic agent.

3. A structure providing a fire-resistant seal between a conduit and a partition through which the conduit passes, comprising

a rigid tubular sleeve imbedded in a partition having a conduit to extend therethrough,

a flexible boot connecting each end of said sleeve to said conduit, and



an intumescible thixotropic silicate slurry comprising an aqueous sodium silicate solution, a glycol, a polyvalent metal oxide or hydroxide, and a thixotropic agent between said conduit and said boots, so as to provide a flexible permanent seal between said conduit and said partition.

4,424,868

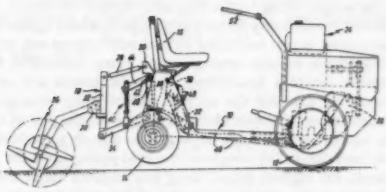
TURF-TREATMENT APPARATUS

Eric Staniforth, and Douglas A. Everett, both of Macclesfield, England, assignors to Sisis Equipment (Macclesfield) Ltd., Chelshire, England

Filed Aug. 7, 1981, Ser. No. 290,897

Int. Cl.³ A01B *45/04*

U.S. Cl. 172—21 **7 Claims**



1. Turf treatment apparatus comprising in combination: a tractor unit including a rear hitch arrangement and a turf treating implement detachably secured to the hitch; said tractor unit comprising a chassis having drivable and steerable front wheel means and freely rotatable rear wheel means, an operator seat carried mainly by said rear wheel means and arranged to dispose the weight of an operator substantially directly above said rear wheel means, the hitch arrangement being powered from a prime mover of the tractor unit to enable the combination to be disposed in a first travel configuration, wherein both the front and rear wheel means engage the ground and support the combination with the treating implement lifted clear of the ground, and a second working configuration, wherein the front wheel means and the treating implement engage the ground and said rear wheel means are lifted clear of the ground, and the combination being powered by the front wheel means to cause operative movement of the treating implement by frictional engagement with the ground, the hitch arrangement supplying such downward pressure to the implement as to cause the rear wheels to be raised clear of the ground even when an operator occupies said seat such that the weight of the operator and the entire unit would assist in applying a load to the treating implement sufficient to insure maximum penetration thereof; said prime mover of the tractor unit and associated tractor unit parts being arranged directly over said front wheel means to insure responsive steering and good traction of the combination.

4,424,869

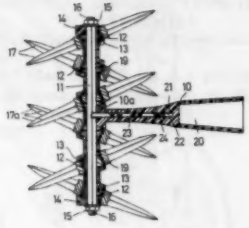
HAND TOOL WITH INTERSECTING PRONGED WHEELS

Hans vom Braucke, Karlstrasse 27, 4973 Vlotho; Manfred vom Braucke, Telgenbrink 105, and Dieter Westerwelle, Markusstrasse 9, both of 4800 Bielefeld, all of Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,030

Int. Cl.³ A01B *1/06*

U.S. Cl. 172—349 **6 Claims**



1. A hand tool for loosening, cutting and crumbling soil or the like, comprising: a continuous, straight, central bearing axle of an angular construction, at least two pronged wheel arrangements having a central bore therein, a bearing sleeve detachably mounting each of said pronged wheel arrangements on the central bearing axle, to be freely rotatable and mounted facing one another to form V-like arrangements, a slidable bearing ring made of self-lubricating plastic material carried in the central bore formed in each respective pronged wheel arrangement, each bearing sleeve mounted to one of the bearing rings to carry one of said pronged wheel arrangements in a freely rotatable manner on the bearing sleeve, the external surfaces of the bearing sleeve being interrupted by means defining collecting channels and discharge conduits, guide bearings detachably mounted on said central bearing axle between the bearing sleeves and plastic end bearings detachably mounted on said central bearing axle, said bearing sleeves and guide bearing being non-rotatable and displaceable in the longitudinal direction of the axle and provided in a sleeve-like manner with a means defining an angular central aperture, and wherein the central radial planes of the pronged wheel arrangements intersect one another at an acute angle so that the edges of the crosswisely interengaging pronged wheel arrangements which slide along each other, form cutting locations.

4,424,870

ATTACHMENT DEVICE FOR THE FRONT OF A MOTOR VEHICLE

Heinz Weiss, Bensheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Apr. 8, 1982, Ser. No. 366,734

Claims priority, application European Pat. Off., Apr. 22, 1981, 81103031.1

Int. Cl.³ A01B *63/108, 59/048*

U.S. Cl. 172—810 **16 Claims**

1. An attachment device for attaching an implement to the front of a vehicle, said attachment device comprising:

(a) a pair of spaced apart guide tracks fastened in a vertical fashion to frame members of said vehicle, said guide tracks aligned opposite and parallel to each other;

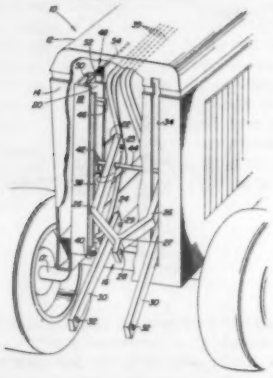
(b) a pair of U-shaped beams vertically movable in said guide tracks, said open portion of said U-shaped beams facing each other;

(c) first and second brackets fastened to each of said U-shaped beams, said brackets spaced vertically apart and extending rearward relative to the front of said vehicle;

(d) a first pair of swinging arms joined together at a forward

end and pivotally attached at rearward ends to said first brackets;

(e) a second pair of swinging arms aligned parallel to said first pair of swinging arms and pivotally attached at rearward ends to said second brackets, said first and second pairs of swinging arms extending forward beyond the front of said vehicle for supporting an implement;



(f) a pair of hydraulic cylinders, each pivotally attached at a first end to said vehicle frame and rotatably attached at a second end to one of said first pair of swinging arms; and

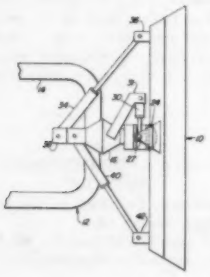
(g) control means for actuating said hydraulic cylinders to raise and lower said implement relative to the ground.

4,424,871

TILTING AND ANGLING MECHANISM FOR DOZER BLADE

Douglas B. Stickney, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 17, 1982, Ser. No. 378,675
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—821 **3 Claims**



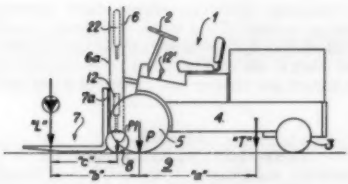
1. In a combination including a dozer blade and support frame therefor connected together by a main universal connection, a stabilizer connection between the frame and blade for guiding the movement of the blade relative to the frame, the main universal connection and stabilizer connections cooperating to define and angle axis which shifts relative to frame about which the blade is anglable relative to the frame, a pair of extensible and retractable, hydraulic angling actuators connected between the frame and locations of the blade at opposite sides of the main universal connection for angling the blade about the angle axis, and an extensible and retractable, hydraulic tilt actuator for effecting tilting movements of the blade, the improvement comprising: the pair of angling actuators respectively having first and second universal connections with the frame which are located on an axis passing through the main universal connection to thereby establish a tilt axis, whereby extension or retraction of the tilt actuator will effect tilting movement of the blade about said tilt axis without inducing loads on the angling actuators.

4,424,872

TRUCK

Ingmar Granlind, Skogsbemsvägen 14, 146 00 Tullinge, and Ove Bodin, Trädgårdsgatan 12, 216 00 Fjugesta, both of Sweden

Filed Oct. 23, 1981, Ser. No. 314,510
Claims priority, application Sweden, Oct. 23, 1980, 8007462; Sep. 29, 1981, 8105744
Int. Cl.³ B62D *61/12*
U.S. Cl. 180—24.02 **10 Claims**



1. A truck, comprising lifting devices for the lifting of loads, at least one pair of wheels located at a distance from each other and adjacent to said lifting devices, at least one support wheel located between the pair of wheels, said support wheel being arranged to absorb a proportion of the compressive forces due to the weight of the load acting upon the pair of wheels, urging means for selectively forcing said support wheel against a base, said urging means including an hydraulic piston and cylinder, the pressure in said urging means being controlled by the pressure inside a load-lifting hydraulic piston and cylinder device, an axle for the support wheel being arranged at a predetermined distance ahead of an axle for the pair of wheels, the support wheel being arranged to absorb a proportion of axle load due to the weight of the load acting upon the pair of wheels, the support wheel being free to pivot about a vertical axis coincident with a piston rod of the urging means, means cooperating with the support wheel for causing a turning of said support wheel about the vertical axis in relation to the position of steerable wheels of the truck.

4,424,873

CONSTANT BELT TENSION ASSEMBLY FOR WHEELCHAIRS

Daniel J. Terlaak, Columbia Hills, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Filed Dec. 2, 1981, Ser. No. 326,493
Int. Cl.³ F16H *7/10*; B60K *17/04*
U.S. Cl. 180—65 E **13 Claims**

1. An electric wheelchair comprising:

a wheelchair frame;

a drive pulley which is adapted to be rotated by a motor, the drive pulley and motor being operatively connected with the wheelchair frame;

a wheel pulley for rotating a ground engaging wheel;

a belt disposed in relatively loose frictional engagement partially around the circumference of the drive and wheel pulleys;

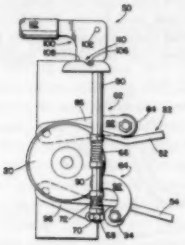
a guide rod;

a first slide assembly slidably mounted on the guide rod;

a first roller movably mounted near one of the pulleys and a first portion of the belt, the first roller being operatively connected with the first slide assembly;

a second roller operatively connected with the guide rod adjacent said one of the pulleys and adjacent a second portion of the belt;

means for selectively moving the first and second rollers toward the belt first and second portions such that the rollers urge the belt to wrap further around the circumference of the one of the pulleys;



a first link operatively connected with the first roller and pivotally connected at one end with the wheelchair frame adjacent the first drive pulley; and,

a second link operatively connected with the second roller and pivotally connected at one end with the wheelchair frame adjacent the first drive pulley.

4,424,874

DRIVE AXLE DEVICE

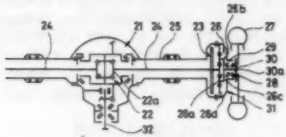
Kazuyoshi Koike, Ryugasaki; Junya Watanabe, Tone, and Masami Someya, Ibaragi, all of Japan, assignors to Toyo Impanki Co., Ltd., Osaka, Japan

Filed Aug. 7, 1981, Ser. No. 291,152

Claims priority, application Japan, Dec. 22, 1980, 55-182400

Int. Cl.³ B60B *35/14*

U.S. Cl. 180—70 R **6 Claims**



1. A drive axle device comprising:

a differential gear unit incorporated in a central housing and driven by a propeller shaft;

a pair of drive shafts the inner ends of which are coupled to the output gears of said differential gear unit, respectively,

axle tubes incorporating said drive shafts, the inner ends of said axle tubes being secured to the right and left ends of said central housing, respectively;

disk brakes incorporated in said axle tubes and coupled to the outer ends of said drive shafts, respectively;

planetary gear speed reducing units coupled to the outer ends of said drive shafts, respectively, each said planetary gear speed reducing unit comprising a sun gear arranged on said drive shaft to rotate therewith, planetary gear means engaging said sun gear, a planetary carrier adapted to rotatably support said planetary gear means, and a ring gear adapted to engage said planetary gear;

wheel shafts having the central axes thereof in line with the central axes of said drive shafts and secured to said planetary carriers, respectively;

a wheel secured to each of said wheel shafts;

gear cases, each of which is provided at the outer end of the respective drive shaft, each said gear case fixedly holding a respective ring gear and having its inner end thereof secured to the outer end of the respective axle tube;

first bearings rotatably supporting said wheel shafts on the inner walls of said gear cases, respectively;

second bearings rotatably supporting said planetary carriers on the inner walls of said gear cases, respectively; and

said planetary gear speed reducing units each being located outside of but closely adjacent each of said wheels on the side thereof toward said central housing.

4,424,875

RUNNING CONTROL APPARATUS FOR TRACKLESS MOVING BODY

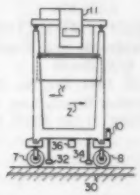
Yutaka Yoshida, Kudamatsu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,718

Claims priority, application Japan, Mar. 31, 1980, 55-40524

Int. Cl.³ B62D *1/28*

U.S. Cl. 180—168 **6 Claims**



1. An apparatus for controlling the running of a trackless moving body comprising:

drive motors provided in a moving body for individually rotating at least one right-hand wheel and at least one left-hand wheel of said moving body;

a conductor cable disposed along a running path of said moving body for guiding said moving body, said cable producing a magnetic field;

at least two sensors spaced apart and disposed in said moving body in the running direction thereof, each of said sensors being responsive to the magnetic field of said cable for producing an output signal indicative of an amount of position deviation of said moving body relative to said conductor cable;

adder circuit means connected to said sensors for adding the output signals of said sensors to produce an output signal indicative of the addition result;

subtractor circuit means connected to said sensors for subtracting the output signals of said sensors to produce an output signal indicative of the subtraction result;

first comparator circuit means connected to said adder circuit means for comparing the output signal of said adder circuit means with a first reference range extending from a lower reference value to an upper reference value and for producing an output signal indicative of the comparison result;

second comparator circuit means connected to said subtractor circuit means for comparing the output signal of said subtractor circuit means with a second reference range extending from a lower reference value to an upper reference value and for producing an output signal indicative of the comparison result;

logic circuit means connected to said first and second comparator circuit means and responsive to the output signals thereof for determining the attitude of said moving body with respect to said conductor cable, said logic circuit means producing output signals indicative of the determined attitude;

output relay means connected to said logic circuit means and said drive motors, said output relay means being responsive to the output signals of said logic circuit means for selectively controlling said drive motors by varying the rotational speeds of said drive motors;

wherein said logic circuit means produces output signals for

said output relay means to control said drive motors to rotate substantially at the same rotational speed at least when said logic circuit means determines from the output signals of said comparator circuit means that said moving body is closer to said conductor cable than a predetermined distance and is approaching said conductor cable; and

wherein said logic circuit means produces output signals for said output relay means to control said drive motors to rotate at different rotational speeds so as to steer said moving body toward said conductor cable when said logic circuit means determines from the output signals of said comparator circuit means that said moving body is separated from said conductor cable and is running substantially along the elongated direction of said conductor cable or that said moving body is deviating away from said conductor cable.

4,424,876

PNEUMATIC SPEED LIMITER FOR VEHICLES

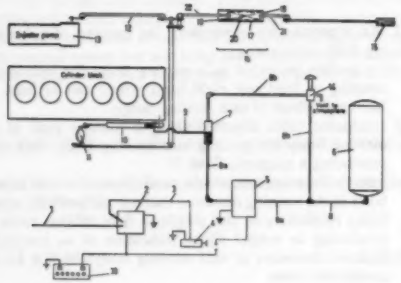
Angelo I. Filho, Sao Caetano do Sul, Brazil, assignor to Mercedes-Benz Do Brasil S/A, Brazil

Filed Aug. 26, 1981, Ser. No. 296,393

Claims priority, application Brazil, Aug. 12, 1981, 8005622

Int. Cl.³ B60K *31/00*; F02D *31/00*

U.S. Cl. 180—175 **13 Claims**



1. A speed limiter for vehicles, wherein at a predetermined speed the air and the fuel supplies to the vehicle's engine are reduced to prevent acceleration beyond said predetermined speed comprising an angular velocity sensor responsive to the rotation of the vehicle speedometer cable to emit an output signal when a predetermined angular velocity of said cable is exceeded, and to apply said signal to an electropneumatic valve which controls a supply of compressed air to an actuator, the sensor, valve and actuator being so arranged that when the sensor emits an output signal, the valve admits air to the actuator which acts on the vehicle throttle linkage to reduce air and fuel supplies to the engine, the sensor and valve being supplied with electricity directly from the vehicle's battery.

4,424,877

OSCILLATING LINK MECHANISM FOR THREE-WHEELED MOTOR VEHICLES

Katsuyoshi Kawasaki, Mitaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

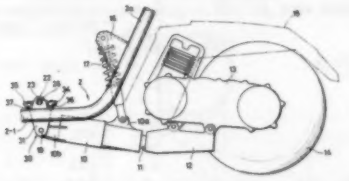
Filed Jan. 21, 1982, Ser. No. 341,367

Claims priority, application Japan, Jan. 26, 1981, 56-10120[U]

Int. Cl.³ B62K *5/04, 11/02*

U.S. Cl. 180—210 **11 Claims**

10. A three-wheeled motor vehicle including a front body, a rear body, an oscillating link mechanism pivotally connected to said front body, a swing joint having a front end pivotally connected to said link mechanism, a rotary joint having a front end rotatably connected to a rear end of said swing joint, and a rear end connected to said rear body and a rear cushion unit having an upper end connected to said front body and a lower end connected to said swing joint, said front body having a pair of parallel tubular frame members, a portion of which extend horizontally in the direction of travel of said vehicle and said oscillating link mechanism comprises a pair of brackets fixedly mounted on said frame members respectively, a pivot shaft supported at opposite ends by said brackets, a cylindrical sleeve having a pair of link members secured thereto surrounding said shaft between said frame members, rubber bushing means secured to said shaft and said sleeve for concentrically supporting said sleeve for oscillating movement about said



shaft within the deformable range of rubber bushing means, a shaft supported by the lower end of said link members with said swing joint being pivotally connected to said shaft, a pair of supporting members each integrally connected to an upper end of a a respective link member and extending in opposite directions from said sleeve above said frame members with one of said supporting members extending rearwardly from one end of said sleeve and the other of said supporting members extending forwardly from the other end of said sleeve and a pair of stops formed of flexible material connected to a lower surface of a respective supporting member and extending downwardly for contact with said frame members.

4,424,878

ARTICULATED TRACTOR WITH REAR LIFTING DEVICE POWERED BY TANDEM ENGINES

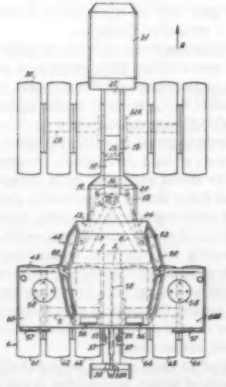
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Division of Ser. No. 4,188, Jan. 17, 1979, which is a division of Ser. No. 703,652, Jul. 8, 1976, Pat. No. 4,181,315. This application Dec. 23, 1980, Ser. No. 219,869

Claims priority, application Netherlands, Jul. 8, 1975, 7508091

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—235 **15 Claims**



1. A tractor which comprises a frame having a rear frame portion which is provided with a three-point lifting device adapted to raise relatively heavy loads, a front frame portion,

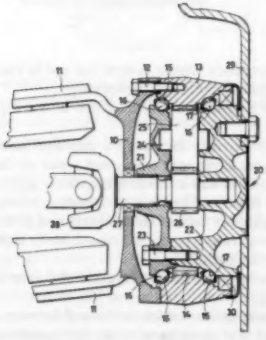
a rear axle connected to said rear frame portion, a front axle connected to said front frame portion, sets of ground engaging wheels mounted on both said axles, said rear frame portion extending between ground engaging wheels of said rear set of ground engaging wheels and being not more than forty-five centimeters in width where it extends between the sides of said ground engaging wheels of said rear set, a rear engine carried by said rear frame portion between said front and rear axles, said rear engine connected to said rear wheels for driving same, said front frame portion carrying a front engine which is located as seen in side view substantially in advance of the forward set of said ground wheels and is connected to said front wheels for driving same, said two frame portions being provided with pivot means whereby they are pivotable relative to one another about an axis defined substantially entirely by parts located beneath said rear engine and at a level above the ground which is less than the level of said front and rear axles, said pivot means being a first constant distance from said front axle and a second constant distance from said rear axle, said first constant distance being about fifty-five percent of said second constant distance whereby any bending moment occurring in the vicinity of said pivot means is of relatively low magnitude irrespective of the loaded condition of said lifting device.

4,424,879

WHEEL-HUB WITH AN EPICYCLIC REDUCTION GEAR, ESPECIALLY FOR THE FRONT AXLE OF AGRICULTURAL TRACTORS

Franco Sonzogni, Canonica D'Adda, Italy, assignor to SAME S.p.A., Italy

Filed Jun. 1, 1981, Ser. No. 269,280
Claims priority, application Italy, Jun. 6, 1980, 21989/80[U]
Int. Cl.³ B60K *17/04*
U.S. Cl. 180—255 **4 Claims**



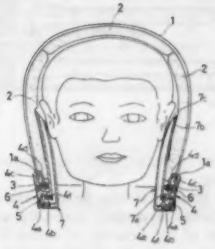
1. A wheel-hub with an epicyclic reduction gear, comprising a first bottom section of an outer box which is intended to be secured to vehicle suspensions, and to which is fastened an annular section in the interior of which a ring gear is formed which meshes with planetary gears carried by a rotary set in the centre of which a pinion of an input shaft is received, peripherally to the planet carrier there being formed directly thereon two races which confine the seating for two rows of balls with complementary races formed laterally of said ring gear and directly on said annular section of the outer box.

4,424,880

ACOUSTIC DEVICE FOR A HEAD PROTECTOR

Masato Murayama, Kawagoe, and Mitsugi Akita, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,695
Claims priority, application Japan, Dec. 8, 1980, 55-176593[U]; Dec. 8, 1980, 55-176594[U]
Int. Cl.³ H04R *25/00*
U.S. Cl. 181—129 **9 Claims**



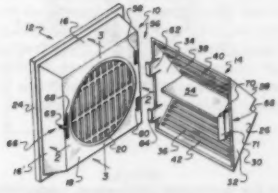
1. An acoustic device for a head protector, comprising:
a sound generating element for generating acoustic sounds;
a case member having an inner chamber for containing at least a part of said sound generating element therein;
a sound conducting member extending from said case member so as to conduct the acoustic sounds generated in said inner chamber;
a holding member for holding said case member on said head protector;
said sound conducting member being formed to extend from said case member held on said head protector to a location substantially corresponding to an ear of a wearer of said head protector; and
said acoustic device being detachably mounted to said head protector.

4,424,881

SPEAKER ASSEMBLY

Kenneth M. Hattori, Bensenville, Ill., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Feb. 17, 1982, Ser. No. 349,628
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—155 **6 Claims**



1. A speaker assembly comprising
(a) a hollow base member including sidewalls and a top portion having a grille therein,
(b) a speaker unit comprising a hollow wedge shaped member including intersecting walls forming a V-shaped groove at an apex of said wedge shaped member, a rib extending along said V-shaped groove, each of said intersecting walls having an opening therein, and spaced parallel angled louvers carried in said opening, and
(c) coupling means coupling said speaker unit to said base member.

4,424,882

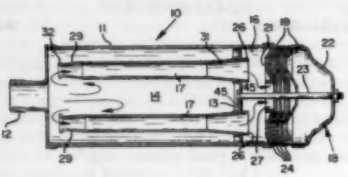
RESONATOR TYPE MUFFLERS

Paul S. Moller, 9350 Curry Rd., Dixon, Calif. 95620

Continuation-in-part of Ser. No. 232,816, Feb. 9, 1981, abandoned. This application Jul. 20, 1981, Ser. No. 284,984

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—231 **38 Claims**



1. A resonator type muffler for an internal combustion engine, comprising:

an elongated housing having an inlet and an outlet;

a chamber divider extending generally transversely across the interior of the housing to define a first chamber in communication with the housing's inlet, upstream of the divider, and a second chamber downstream of the divider;

at least one sound inductor tube extending longitudinally in the housing through the chamber divider, with an inlet end in the first chamber and an outlet extending into the second chamber; and

a wall forming a downstream end of the second chamber, with an opening;

the outlet end of the inductor tube being spaced from the wall at the downstream end of the second chamber by a distance of from about ½ to 1 inch, and being offset from the wall opening.

4,424,883

SILENCER FOR PNEUMATIC EQUIPMENT

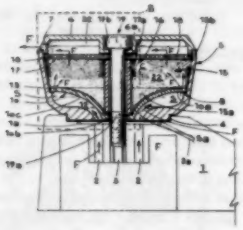
Franco Musiani, Monte S. Pietro, Italy, assignor to Panda S.r.l., Bologna, Italy

Filed Mar. 9, 1982, Ser. No. 356,446

Claims priority, application Italy, Mar. 31, 1981, 4805/81[U]

Int. Cl.³ F01N *1/24*

U.S. Cl. 181—258 **11 Claims**



1. Silencer for pneumatic equipment, comprising a casing, open at one extremity and closed at the other by means of a cover in which there is at least one slit, that can be locked in a removable fashion to the body of the compressed gas device with which it is used, in such a way that the open extremity communicates directly with a duct for the discharge of the gases in the said device, there being in the said casing, starting at the open extremity and going towards the cover, stably inserted and, at the same time, closely enshrouded peripherally by the inside surface of the casing, a first element, a filter, and a second element, of which the first element defines, in cooperation with the relevant part of the inside surface of the casing, a first expansion chamber for the compressed gases, as well as, in cooperation with the second element and with a portion of the inside surface of the casing delimited by the said elements, a second compressed gas expansion chamber that contains the said filter, while the second element defines, furthermore, in cooperation with the cover, a third expansion chamber for the compressed gases; both the said first and second elements being provided with a plurality of through holes to render the first chamber communicating with the second, and the second chamber communicating with the third, respectively, characterized in that said filter is constituted by a layer of porous material, said layer of porous material completely filling the aforementioned second expansion chamber and being constituted by at least two consecutive parts, namely a first part and a second part, that mate with the first and the second elements, respectively, the first part having a porosity greater than that of the second part.

4,424,884

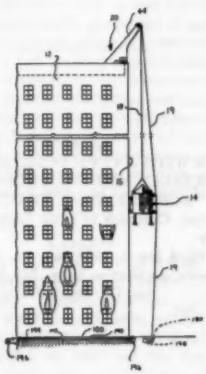
EMERGENCY RESCUE SYSTEM

Charles P. Smith, Jr., 336 N. Palm Dr., Beverly Hills, Calif. 90201

Continuation-in-part of Ser. No. 209,708, Nov. 24, 1980, Pat. No. 4,355,699. This application Jun. 14, 1982, Ser. No. 388,259

Int. Cl.³ A62B *1/02*

U.S. Cl. 182—12 **12 Claims**



1. An emergency rescue system for use in rescuing persons from a multistory building, comprising:

a laterally extending track mounted at the top of the building;

a movable carriage including a carriage base mounted for movement along said track, and a pair of davits pivotally connected to and extending angularly upwardly and outwardly from said base to an operative position overhanging an exterior face of the building and pivotally movable to an inoperative position pivoted away from the exterior face of the building;

a gondola for suspension alongside the exterior face of the building;

a pair of suspension cables connected between said carriage base and said gondola whereby said gondola is suspended from said carriage base, said suspension cables being received over pulleys carried at the upper ends of said davits;

said carriage base comprising first and second sections movable laterally with respect to each other, said davits being pivotally connected respectively to said first and second sections, and including means for driving said first and second sections along said track relatively away from each other to spread said davits and facilitate swinging movement of said gondola onto the top of the building, and for driving said first and second sections along said

track relatively toward each other to correspondingly move said davits back toward each other;

means on said carriage base for adjusting the length of said suspension cables for adjusting the elevational position of said gondola;

a tension cable connected between said carriage base and a base plate near the base of the building, said tension cable being engageable with the side of said gondola opposite the building for urging said gondola into bearing engagement with the exterior face of the building, said base plate being mounted for movement in a lateral direction generally in parallel with the track at the top of the building;

first power drive means positioned substantially at the top of the building for laterally driving said carriage base along said track to adjust the lateral position of said gondola; and

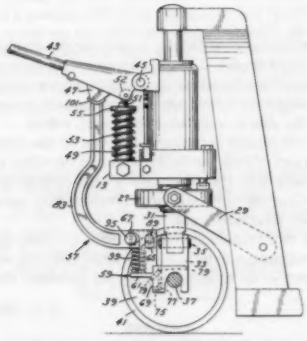
second power means for laterally moving said base plate with respect to the exterior face of the building to maintain said base plate generally in vertical alignment with said carriage.

4,424,885

BRAKE ASSEMBLY FOR PALLET LIFT TRUCK

Tuval Kedem, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Aug. 26, 1981, Ser. No. 296,103
Int. Cl.³ B60T *1/04*
U.S. Cl. 188—22 **9 Claims**



1. A brake assembly for a pallet lift truck having a base plate, a depending axle shaft having a wheel fork mounting an axle journaling a pair of spaced resilient wheels, and a normally upright steering handle pivoted at one end upon said base plate;

said brake assembly comprising a brake housing including a pair of laterally spaced upright stirrups having downwardly opening slots positionable over and upon the axle between the wheels;

a normally upright brake arm of L-shape with one end projected into said housing and pivotally mounted thereon;

a brake bar secured to and projecting from opposite sides of said brake arm adjacent and outwardly of its pivotal mounting transversely overlying and spaced from the wheels when in inoperative position;

first spring means within said housing bearing against and normally biasing said brake arm and bar to said inoperative position;

a brake actuator boss upon said steering handle outwardly of its pivotal mounting spaced from the other end of said brake arm;

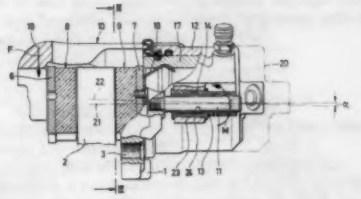
and said steering handle operatively engageable with said other end of said brake arm on manual downward pivotal movement of said steering handle for moving said brake bar against the force of said first spring means into operative frictional compressive retaining engagement with the wheels.

4,424,886

FLOATING CALIPER SPOT-TYPE DISC BRAKE, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Heinz Frigger, Langen-Oberlinden, and Rainer Hoffmann, Kelkheim-Fischbach, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 5, 1981, Ser. No. 290,118
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032511; Aug. 29, 1980, 3032512
Int. Cl.³ F16D *55/224, 65/02*
U.S. Cl. 188—73.35 **7 Claims**



1. In a floating caliper spot-type disc brake, particularly for use in automotive vehicles, for applying braking forces to a disc rotatably mounted on a support, a combination comprising:

a carrier member stationarily mounted on the support;

a caliper member;

means for guiding said caliper member on said carrier member for translatory movement in opposite directions along a predetermined axis at least through a plurality of assembled positions, including at least

means for defining at least one opening in one of said members,

at least one annular intermediate element accommodated in said opening and bounding a passage, and

at least one elongated guide element secured to the other of said members and received in said passage in said assembled positions such that said passage and said elongated guide element are centered on a common axis parallel to said predetermined axis; and

means for urging said members toward said assembled positions, including at least one elastically yieldable region of said intermediate element extending in its relaxed position assumed after the accommodation of said intermediate element in said opening and prior to the assembly of said members, asymmetrically with respect to said common axis into the space occupied by said elongated element in said assembled positions for said region to be elastically deformed and to apply its restoring forces asymmetrically to said elongated guide element in said assembled positions.

4,424,887

BRAKE UNIT

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Continuation of Ser. No. 80,456, Oct. 1, 1979, abandoned. This application Dec. 22, 1981, Ser. No. 333,314
Int. Cl.³ F16D *65/853, 67/00*; B60T *8/12*
U.S. Cl. 188—264 P **33 Claims**

1. A brake assembly comprising:

a housing;

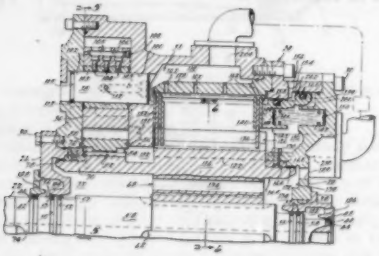
an input shaft rotatably journaled within said housing, including gear means adjacent one end thereof, said gear means including a ring gear axially movably mounted on said input shaft and said input shaft including a gear and

brake disc carrier secured thereto, said ring gear being mounted on said carrier adjacent one end thereof;

bearing means within said housing supportingly engaging opposite end portions of said carrier, said bearing means rotatably supporting said input shaft, labyrinth seals provided between said carrier and said housing immediately axially outwardly of each of said bearing means, said bearing and said labyrinth seals cooperating to limit axially outwardly directed fluid flow;

a plurality of brake discs mounted on said brake disc carrier of said input shaft and rotatable therewith, and axially movably secured to said brake disc carrier;

a plurality of brake plates interposed between said brake disc and nonrotatably mounted within said housing;



actuating means for moving said brake plates and said brake discs into and out of braking relationship to thereby impede rotation of said input shaft; and

fluid pumping means driven by said input shaft and operative to circulate fluid across said brake plates and discs to cool and lubricate same, said fluid pumping means also being operative to generate a fluid pressure causing said actuating means to move said brake discs and plates into braking relationship, said fluid pumping means comprising a gear pump drivingly engaged by said gear means of said input shaft;

wherein said housing includes passage means for conducting fluid from said gear pump to said brake discs and plates.

4,424,888

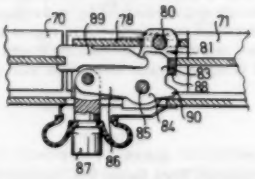
SHOE AND DRUM BRAKE

Leslie C. Chouings, Holly Croft, Bourton, Rugby, Warwickshire, England

Continuation of Ser. No. 10,531, Feb. 9, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,761

Int. Cl.³ F16D *51/20*

U.S. Cl. 188—331 **12 Claims**



1. A brake comprising a torque reaction member, a drum which is rotatable relative to the torque reaction member about an axis, two shoes mounted on the torque reaction member for movement relative thereto circumferentially of the drum and radially of the drum for engaging the drum for exerting braking torque thereon, abutment means on said torque reaction member for limiting movement of the shoes circumferentially of the drum in respective opposite directions and thereby defining first and second limit positions of the shoes, biasing means for biasing the shoes in the same direction around the drum towards said first limit position, actuator means moveable relative to said torque reaction member for applying the shoes to the drum and means for transmitting force from the actuator means to the shoes unequally such that the larger force urges the shoes circumferentially towards said second limit position and the smaller force urges the shoes circumferentially towards said first limit position.

4,424,889

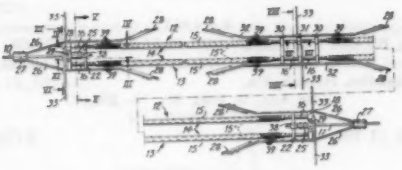
PHASE BREAK-SECTION INSULATOR DEVICES OF HIGH TENSILE STRENGTH

Max Höckele, Fichtenstrasse 3, Bergien-Stenach D-7061, and Werner Müller, Karlstrasse 17, Fellbach, both of Fed. Rep. of Germany D-7012

Filed Mar. 12, 1981, Ser. No. 243,191

Int. Cl.³ B60M *1/18*

U.S. Cl. 191—39 **34 Claims**



27. A device for establishing an electrically insulating connection of high tensile strength between two sections of the contact wire of an overhead line, which device comprises:

two insulating rods which are located parallel to each other and side by side at a distance from each other;

connection structures for joining one end of the contact wire with one end of both insulating rods and the other end of the contact wire with the other end of both insulating rods;

two pairs of current collector guides respectively joined to said connection structures; and,

each of the two insulating rods comprising a fiber glass core and a concentric polytetrafluroethylene covering which, for at least part of its length, has grooves provided therein.

4,424,890

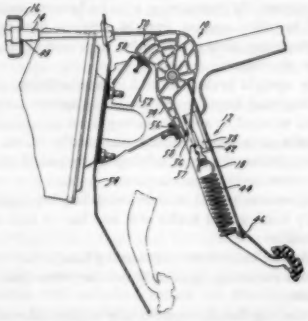
MANUAL CLUTCH WEAR ADJUSTER

Michael R. Duethman, Vadnais Heights, Minn., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 29, 1981, Ser. No. 306,797

Int. Cl.³ F16D *13/75*

U.S. Cl. 192—111 A **1 Claim**



1. A clutch actuator assembly for a motor vehicle clutch of the type being normally resiliently loaded to an engaged posi-

tion effecting power transfer between the engine and transmission of the vehicle, the clutch actuator assembly comprising:

A. a pedal member having a generally U-shaped cross-section pivotally mounted in the vehicle and defining an elongated longitudinal axis;

B. a cable assembly including a cable fixed at one end to the vehicle clutch;

C. a rack-like adjuster member axially slidably received within said pedal member U-shaped cross-section for slidable movement along said pedal member longitudinal axis and including means for attachment to the other end of said cable;

D. axially resilient means in the form of a coil tension spring received within said pedal member U-shaped cross section and aligned on said longitudinal axis with said spring's one end fixed to said adjusting member and said spring's other end grounded to said pedal member;

E. an actuator member pivotally mounted in the vehicle within the pedal member about the same axis as said pedal member, and including guide means for receiving the cable;

F. means defining a toothed surface on said actuator member and a complementary toothed surface on said adjusting member in juxtaposition therewith, the complementary toothed surfaces being fully engaged to axially fix said cable with respect to said pedal and actuator member upon certain pivotal movement of said pedal member toward a position effecting disengagement of said clutch and said toothed surfaces being less than fully engaged upon certain pivotal movement of said pedal member toward a position effecting engagement of the clutch; and

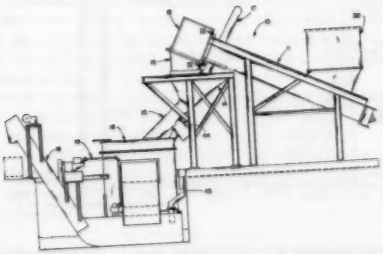
G. stop means on the vehicle engageable with the actuator member for limiting separating movement between the complementary toothed surfaces, whereby axial movement of said cable with respect to said pedal and actuator members permits compensation for clutch wear.

4,424,891

EQUIPMENT FOR RECLAIMING THE WASTE PRODUCTS OF MACHINING

Russell D. Dudley; Larry D. Areaux, both of Kalamazoo, and Robert H. Dudley, Portage, all of Mich., assignors to Reclamet, Inc., Kalamazoo, Mich.

Filed Jun. 22, 1981, Ser. No. 275,732
Int. Cl.³ B65G *11/00*
U.S. Cl. 193—2 R **2 Claims**



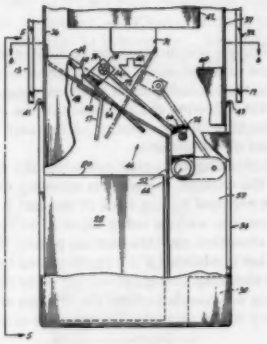
1. In a system for reclaiming the scrap metal and cutting oils produced by machining, said scrap metal including chips, metal chunks, and metal turnings, a receiving bin into which the scrap metal in random condition is dumped; a conveyor housing having a screw conveyor communicating with the bottom of said bin and passing out through one wall of said bin, a metering plate secured to said one wall above said conveyor, the bottom edge of said plate being positioned above and closely adjacent said conveyor for metering the rate of discharge of the scrap metal from said bin; a scrap crusher having a receiving post in one of its sides; the discharge end of said conveyor discharging into said receiving post; grizzly bars forming the bottom of said conveyor housing beneath said screw conveyor adjacent said receiving post for separating by gravity the chips and chunk portions of the scrap metal from the metal turnings; a depending vertical first chute beneath said crusher for receiving crushed material discharged from said crusher; a second depending chute beneath said grizzly bars for receiving the chips and chunks passing between said bars; the upper ends of said chutes being sealed except for air passing through said crusher and said grizzly bars, said first and second chutes discharging into a downwardly inclined tubular conduit; the lower end of said conduit discharging into a centrifuge having means for creating a negative air pressure in said conduit; an air inlet opening in the lower wall of said conduit for introducing at a velocity sufficient to entrain and transport the crushed materials, chips and oils to the centrifuge while permitting the chunks to pass by gravity through the air inlet whereby all of said scrap material discharged through said grizzly bars and from said crusher is moved by gravity until it is discharged or enters said centrifuge.

4,424,892

COIN OPERATED NEWSRACK

Brian J. Marcroft, Norwalk, Calif., assignor to The Times Mirror Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 168,007, Jul. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 113,576, Jan. 21, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,668
Int. Cl.³ G07F *9/04*
U.S. Cl. 194—1 D **21 Claims**



1. A coin operated newsrack comprising:

a support frame;

a newspaper storage compartment on the frame having a normally locked door for access to the compartment;

a coin mechanism housing on the frame;

a coin return receptacle in the housing;

a coin mechanism mounted in the housing and adapted to unlock the door of the compartment, and drop coins at a designated deposit point in the housing responsive to actuating means when the proper coinage is present, and adapted to drop coins in the coin return receptacle responsive to the actuating means when the proper coinage is not present;

a coin collecting chamber in the housing underneath the deposit point;

a passageway between the deposit point and the coin collecting chamber to permit coins to drop from the coin mechanism to the coin collecting chamber;

a control device movable between a first position and a second position; and

means responsive to the control device for diverting coins at the deposit point from the passageway to the return receptacle when the control device is in its first position and for

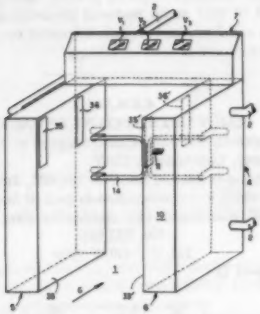
clearing the opening to transfer coins from the deposit point to the coin collecting chamber when the control device is in its second position.

4,424,893

METHOD AND INSTALLATION FOR ENCOURAGING THE RESTITUTION OF SHOPPING CARTS IN A SUPERMARKET

Guy Gillet, Deols, France, assignor to Supermarket Systems, St. Lambert des Bois, France

Filed Dec. 4, 1980, Ser. No. 213,191
Claims priority, application France, Jun. 23, 1980, 80 13884
Int. Cl.³ G07F 7/06
U.S. Cl. 194—4 C 23 Claims



1. A method for encouraging the restitution of a rolling cart in a reception area the access of which is controlled by openable wickets, the encouragement being expressed by the delivery of a ticket following the restitution of the card, wherein:

a first checking of the identity of the cart is carried out upstream of the wickets;

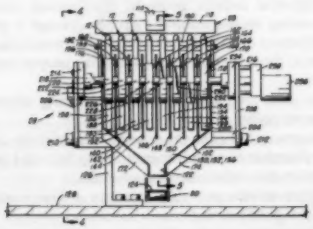
a second checking is carried out when the cart opens and passes the wickets, the wickets allowing during this passage an eventual pulling back of the cart from the reception area; the wickets being allowed to come back to a closed condition once the cart has passed; the distribution of a ticket is inhibited if the cart is pulled back during the second checking, and is carried out if the first and second checking are conclusive and the wickets are closed after the entry of the cart into the reception area.

4,424,894

SEQUENCING LAMP FEEDER

John Fajt, and James V. Neal, Jr., both of Wynnewood, Okla., assignors to Xenell Corporation, Wynnewood, Okla.

Filed Sep. 12, 1980, Ser. No. 186,588
Int. Cl.³ B65G 47/68
U.S. Cl. 198—451 15 Claims



1. A sequencing drop chute apparatus for feeding a batch of electrical components one at a time to a single line conveyor, comprising:

a support frame;

an inclined surface attached to said support frame;

a plurality of walls extending upward from an upper portion of said inclined surface and dividing said upper portion of said inclined surface into a plurality of chutes, there being at least one chute for each electrical component of said batch of electrical components;

a camshaft, rotatably mounted upon said frame above said inclined surface, and including a plurality of eccentric cams extending downward toward said chutes, one of said cams being operably associated with each of said chutes for periodically blocking and periodically opening each of said chutes, said cams being arranged so that said plurality of chutes are opened one at a time thereby permitting said batch of electrical components to pass one at a time through said drop chute apparatus; and

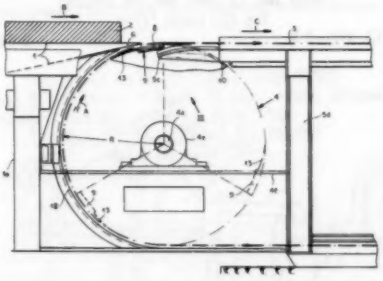
a plurality of spring strips, one extending into each of said chutes between said eccentric cams and said inclined surface so that engagement of said eccentric cams with said strips causes each of said strips to cyclically move between a down position blocking movement of an electrical component down its respective chute and an up position allowing an electrical component to slide down its respective chute between said strip and said inclined surface.

4,424,895

APPARATUS FOR THE MANIPULATION OF PRESS MATS

Jürgen Pesch, Krefeld-Traar; Günter Knoll, Krefeld-Fischeln, and Werner Thelen, Kempen, all of Fed. Rep. of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,708
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007731
Int. Cl.³ B65G 37/00
U.S. Cl. 198—472 9 Claims



1. An apparatus for transferring mats in the production of pressed board, comprising:

a feed conveyor having a discharge end and a mat-carrying surface lying in a horizontal plane and adapted to feed a mat along said plane;

a receiving conveyor spaced from said end of said feed conveyor for entraining a mat along said plane;

an intermedite drum disposed between said conveyors, said drum having:

a cylindrical periphery tangent to said plane,

at least one recessed portion inwardly of said cylindrical periphery for receiving a head bar connected to a flexible underlay for said mat,

a transition surface extending from said recessed portion of

said cylindrical periphery and progressively merging therewith along which said underlay lies,

means for retaining said bar in said recessed portion during rotation of said drum until said recessed portion reaches said plane, and

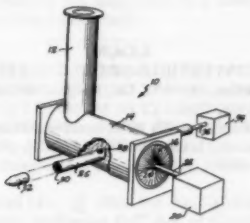
means for shifting said bar into said plane as said recessed portion approaches said plane, said recessed portion being a fixed pocket formed in said drum and having a leading flank in the direction of rotation of said drum forming an abutment for a leading edge of said bar, said transition surface having a leading edge disposed inwardly of the outer edge of said flank, said transition surface being formed on a movable member on said drum swingable between a position wherein said transition surface lies inwardly of said cylindrical periphery and a position in which said transition surface lies along said cylindrical periphery, means being provided in said drum to swing said movable member between said positions.

4,424,896

DUST FEED MECHANISM

Edward M. Milliman, Benton City, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,660
Int. Cl.³ B65G *33/00*
U.S. Cl. 198—545 **9 Claims**



1. A device for uniformly feeding dust to aerosolizing means comprising:

a hopper for receiving dust;

a rotatable hopper brush positioned within the hopper;

a feed tube having an opening and coupled to the hopper such that dust from the hopper may be transferred to the feed tube through the opening in the feed tube and aerosolizing means at an end of said feed tube;

a rotatable spiral feed brush positioned within said feed tube;

means to drive the feed brush so as to feed dust through said feed tube to said aerosolizing means; and

means to drive the hopper brush wherein with the means driving the brushes dust is delivered to the feed brush at a rate greater than the rate that dust is delivered to the aerosolizing means.

4,424,897

DISPLAY CARTON AND BLANK THEREFOR

Joseph F. Ondris, Murray Hill, N.J., and Felix Korn, Forrest Hills, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,368
Int. Cl.³ B65D *5/50, 25/00*
U.S. Cl. 206—45.14 **7 Claims**

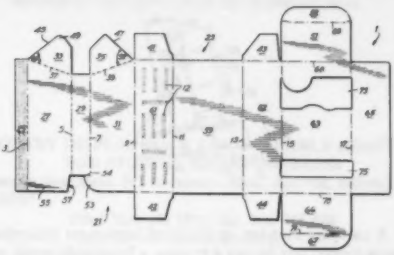
1. A one-piece blank for a carton assembly having an outer carton structure and an inner compartment; said blank being provided with a front carton wall having end closure flaps attached at each end thereof, a glue panel contiguous with said front carton wall along one fold line and extending to one side of said front carton wall, and extending from the other side of said front carton wall and successively joined thereto by parallel substantially vertical fold lines:

(a) a first side carton wall;

(b) a back carton wall;

(c) a second side carton wall;

(d) a first inner compartment side panel;



(e) an inner compartment back panel;

(f) a second inner compartment side panel; and

(g) a glue panel

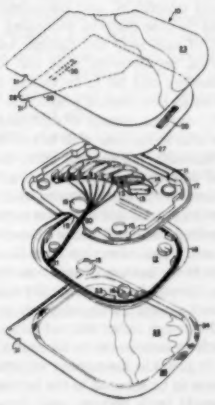
one of said inner compartment side panels being provided near one of its margins with self-centering beam directed toward said inner compartment back panel.

4,424,898

NEEDLE AND SUTURE HOLDER AND PACKAGE

Eberhard Thyen, Middlesex, and Charles D. Carr, Martinsville, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Apr. 8, 1982, Ser. No. 366,508
Int. Cl.³ A61B *17/06*
U.S. Cl. 206—63.3 **11 Claims**



1. Means for removably securing a plurality of sterile, curved, surgical needles in spaced relationship with said needles lying and being held in substantially the same plane, said means comprising:

a planar member, and a plurality of holding means disposed from one surface of said planar member, each of said holding means having an elongate shape, adjacent longer sides of adjacent holding means having portions parallel whereby a curved needle placed between said adjacent longer sides is gripped on its inside curved surface or its concave curved surface in at least two points and on its outside curved surface or its convex surface at one point to hold the needle in a plane parallel to said planar member.

4,424,899

INSTRUMENT CARRYING CASE

Sheldon J. Rosenberg, New York, N.Y., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,947
Int. Cl.³ B65D 79/00
U.S. Cl. 206—305 1 Claim

1. A carrying case for an electrical instrument comprising, an open topped box having a bottom, a front wall, a rear wall and a pair of side walls, said side walls being about three times longer than the height of said rear wall, and the width of said front and rear walls being about twice greater than said height, a lid having a rectangular top panel having a length and width approximating that of, respectively, said side walls and said rear wall, and having, also, respectively, said side walls and said rear wall, and having, also, side flanges depending from the side edges of said panel, said lid being adapted to fit over and close the top of the box with said flanges being on the outside of, and overlapping with, the corresponding walls of said box, all said elements of said box and lid being relatively rigid and having a laminated structure comprising an inner layer of stiff material and an outer layer of flexible material, a flexible hinge joining the top edge of said rear wall of said box to the rear edge of said panel of said lid, said hinge being provided by a strip of said flexible material constituting a portion longitudinally central of, and transversely extending across a sheet of said flexible material providing on longitudinally opposite sides of said strip the flexible material of the laminated structure of, respectively, said rear wall and said panel, said hinge enabling said lid to be swung about 270 degrees thereabout from its box closing position to an inside out position at which the normal outside of said panel is adjacent and substantially parallel to the rear wall of said box, fastening means comprising mutually engageable parts carried by, respectively, said rear wall and said panel and adapted by engagement of said parts to releasably fasten said panel in said inside-out portion to the rear of said box so as to provide a prop raising said rear when said box and lid are placed on a horizontal support surface, and a pair of eyelets formed at a longitudinally central location in the bottom of said box along the longitudinally centerline thereof in longitudinally spaced relation from each other, said eyelets being adapted, in conjunction with a screw passed through either thereof into a hole formed in the bottom of such an instrument to be centrally located in the width thereof, to provide instrument securing means enabling such instrument to be secured to the bottom of said box either inside or outside such bottom, and forwardly or reversely in relation thereto, and, in all such cases, in centered relation with such bottom.

4,424,900

ANTI-STATIC PACKAGES AND PACKAGING MATERIAL

Robert J. Petcavich, 2954 Mission Blvd. #4, San Diego, Calif. 92101

Filed Nov. 8, 1982, Ser. No. 439,857
Int. Cl.³ B65D 73/02, 85/42
U.S. Cl. 206—328 20 Claims

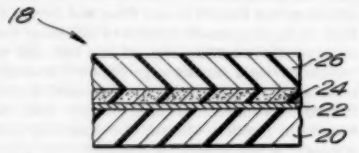
1. A package adapted to receive and protect an electronic component, the walls of the package formed of a flexible sheet material comprising:

a first ply of an electrically insulating material,

a second ply of a conductive material, and

a third ply of an anti-static material,

said second ply being embedded on the surface of one of said first or third plies and the other one of said first or third plies being bonded to said conductive second ply,



said conductive second ply composed of a material providing a surface resistivity no greater than approximately 5×10^4 ohms per square and being sufficiently transparent to permit visual identification of a component through the envelope,

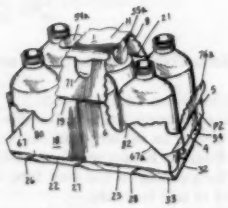
said conductive second ply being sandwiched between said first and third plies.

4,424,901

CONVERTIBLE ARTICLE CARRIER

Charles E. Lanier, Marietta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed May 17, 1982, Ser. No. 378,841
Int. Cl.³ B65D 5/36
U.S. Cl. 206—434 16 Claims



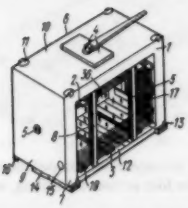
1. A convertible article carrier which is initially of the wrap-around type and formed from a generally rectangular blank and includes top, bottom and side walls which are interconnected to form a tubular structure for packaging a group of articles arranged in at least one row when the blank is wrapped thereabout and its ends are secured together, the improvement comprising a pair of spaced apart generally parallel transverse frangible means formed in said top wall and extending downwardly into both of said side walls defining transverse end panels at each end of the tubular structure and defining a carrying handle therebetween, and a web panel foldably joined to each end edge of each of said end panels along a fold line which is normal to the associated end panel and foldably joined to the associated side wall along a diagonal fold line, each of said web panels being foldable inwardly following rupture of said frangible means into face contacting engagement with the associated side wall simultaneously with swinging movement of said end wall panels into positions astride the ends of the tubular structure converting the previously formed wrap-around type carrier into a basket style carrier.

4,424,902

METHOD AND APPARATUS FOR PACKING GLASS SHEETS IN A CONTAINER

Anatoly A. Silinsky; Vitaly S. Schukin, and Evgeny V. Paushkin, all of Moscow, U.S.S.R., assignors to Proektno-konstruktorskaya Organizatsiya "Orgstekio", Gorkobskaya, U.S.S.R.

Filed Mar. 18, 1982, Ser. No. 359,314
Int. Cl.³ B65D 85/48, 81/10
U.S. Cl. 206—454 7 Claims



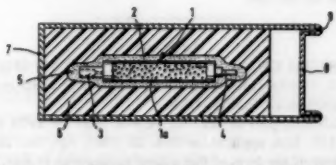
1. A method for packing glass sheets in a container having upper and lower guides provided with elastic straps, comprising the steps of forming a glass stack in the space between the elastic straps; subsequently restraining said glass stack with air gaps between adjacent stacks in a plane perpendicular to said elastic straps by positively expanding the elastic straps; and concurrently pressing the glass stack in a direction parallel with the plane of said glass stack.

4,424,903

APPARATUS FOR STORING TRITIUM, ESPECIALLY TRITIUM WASTES FROM NUCLEAR POWER PLANTS

Josef Knieper, Baesweiler; Heinz Printz, Titz-Rodingen, and Robert Wolfle, Julich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich GmbH, Julich, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,310
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011602
Int. Cl.³ G21F 5/02
U.S. Cl. 206—525 12 Claims



1. An apparatus for storing tritium for a desired period of time in an accessible cartridge which is adapted for passage of gases therethrough which can both supply and remove tritium therefrom at a desired rate, comprising:

(a) a closed and sealed outer waste container,

(b) the waste container being filled with a filler material,

(c) an elongated storage cartridge disposed centrally within the waste container and surrounded by the filler material,

(d) the said elongated storage cartridge having a quick-connect seal member at each end for facilitating the passage of gases therethrough and operable only when connecting means are mounted on them,

(e) the storage cartridge being filled with molecular sieve material having a high selectivity for water vapor and high temperature resistance in the loaded state,

(f) the said storage cartridge having a relatively thin wall and being formed of a corrosion-resistant material which is hermetic to hydrogen diffusion,

(g) the molecular sieve material containing oxidized tritium in the form of HTO or T_2O, and

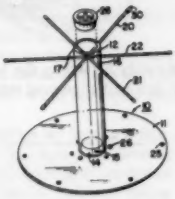
(h) a relatively thick readily frangible shell partition disposed between the filler material and the said cartridge which it encases, whereby the cartridge can be freed from the filler material without damage and its quick-connect seals readily connected it to an inert gaseous supply for removal of the tritium from the molecular sieve.

4,424,904

ROTARY DISPLAY RACK PARTICULARLY ADAPTED FOR STORING RECORD ALBUMS

Quentin Applegate, Jr., 10 Koster Blvd., Apt. 7B, Edison, N.J. 08837

Filed May 20, 1981, Ser. No. 265,543
Int. Cl.³ A47B 41/04; A47G 29/00
U.S. Cl. 211—40 10 Claims



1. A rotary display rack for storing record albums, comprising:

(a) a base,

(b) a turntable rotatably carried by the base,

(c) a central vertically extending longitudinal tubular member of a smaller area than said turntable affixed to said turntable said tubular member having a plurality of pairs of side apertures wherein each pair consists of one aperture in a first side and a second aperture aligned with the first in a second side,

(d) a plurality of equal length rods each separately inserted through an associated pair of apertures with the length of said rods being such that they extend symmetrically from both sides of said tubular member to form a series of compartments about said turntable, and

(e) means located about the surface of said turntable within the area of each compartment to serve as a bottom restraint for an album emplaced vertically on said turntable and retained relatively vertically by said rod at a top end and by said means at a bottom end.

4,424,905

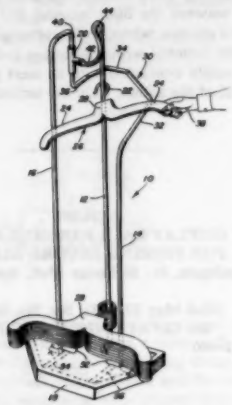
GARMENT HANGER CADDY

Cletus F. Keen, 2736 S. Punta Del Este Dr., Hacienda Heights, Calif. 91745

Filed Feb. 18, 1981, Ser. No. 235,716
Int. Cl.³ A47F 7/00
U.S. Cl. 211—49 R 8 Claims

1. A garment hanger caddy for storing and dispensing garment hangers comprising: a base, a hook-engaging support extending vertically from said base, a pair of spaced supports extending vertically from said base for engaging the respective outer shoulders of a garment hanger, a horizontal loop carried by one of said spaced supports passing behind and spaced from

said hook-engaging support above said base, the spacing of said loop from said hook-engaging support allowing unobstructed



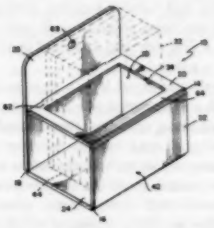
unloading of said caddy by sliding the hangers off said hook-engaging support and said alignment means.

4,424,906

PACKET HOLDER

William R. Richmond, Shelbyville, Ind., assignor to Williams Industries, Inc., Shelbyville, Ind.

Filed May 10, 1982, Ser. No. 376,287
Int. Cl.³ A47F 5/11
U.S. Cl. 211—50 10 Claims



1. A holder for goods, comprising a longitudinally elongated sheet having at least three transverse score lines, the sheet being bent along these score lines to form a top element, a front element, a bottom element, and a back element,

the top element including tongue means for engaging the back element to maintain holder configuration and a window for receiving goods,

the front element unitarily joining the top element and the bottom element,

the bottom element unitarily joining the front element and the back element and supporting a lower portion of goods received in the window in the top element, and

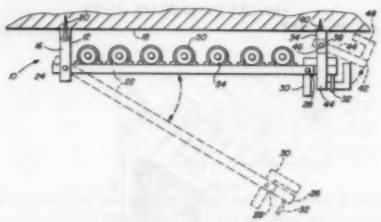
the back element including a aperture means for receiving the tongue means of the top element, the aperture means including a receiving portion and a locking portion integrally connected to the receiving portion the receiving portion including an arcuate edge and notches at the lateral extremities of the arcuate edged for receiving the widest dimension of the tongue means.

4,424,907

FISHING TACKLE STORAGE RACK

Barry L. Robb, 116 Ruby Red Ct., Longwood, Fla. 32750

Filed Oct. 16, 1981, Ser. No. 312,168
Int. Cl.³ A47F 5/08, 7/00
U.S. Cl. 211—60 R 14 Claims



1. A fold-down storage rack for permitting the storage of fishing rods and the like across the ceiling, said rack comprising:

a first rack support;

means for mounting said rack support against a flat surface such as a ceiling, with said rack support extending substantially normal thereto;

a second rack support including at least one arm;

means for mounting said second rack support against said surface along a line spaced from and substantially parallel with said first rack support with said arm extending away from said surface;

a storage rack pivoted at one end to said first rack support and dimensioned to extend across the space between said rack supports and adjacent the extremity of said arm of said second rack support;

holding means coupled to said second rack support and movably engagable with said storage rack for holding said storage rack into a storage position substantially parallel with said surface, and disengagable to permit said storage rack to be pivoted away from said surface, said holding means comprising a holding bracket having a pair of arms, each bracket arm pivoted to said second rack suppport; and

fastening means along said storage rack for holding fishing rods or the like.

4,424,908

CUSTOM CHANGEABLE, KNOCKDOWN SHELF

Walter E. Davitz, Columbus, Ohio, assignor to Production Plus Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 41,944, May 29, 1979, Pat. No. 4,243,146. This application Oct. 28, 1980, Ser. No. 201,492
The portion of the term of this patent subsequent to Jun. 6, 1998, has been disclaimed.
Int. Cl.³ A47F 5/01
U.S. Cl. 211—118 5 Claims

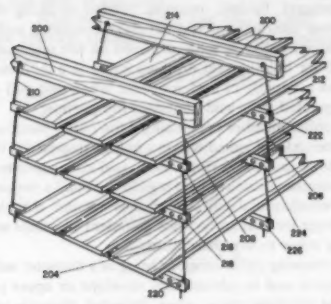
1. A suspended, article supporting shelf comprising:

(a) a plurality of generally horizontal, vertically spaced crossbars each having opposed spaced panels, a cross web extending between and longitudinally along said panels and at least one crossbeam near each end of each crossbar extending between said panels and spaced from said cross web;

(b) a plurality of manually removable sidebars, some of said sidebars extending between the adjacent, vertically spaced ends of said crossbars and a pair of said sidebars extending upwardly from the uppermost one of said crossbars and fastened at their upper ends to a shelf support, each sidebar having an upper end which is bent around and shaped for hanging over an upper one of said crossbeams and a lower, inwardly bent leg extending along the underside of

a cross web and above a crossbeam of a relatively lower one of said crossbars to a down turned tip;

(c) removable retaining means inserted between each of said lower legs and its associated crossbeam for extending



from said crossbeam to said leg for preventing significant movement of said leg and interfering with said turned down tip to prevent withdrawal of said leg; and

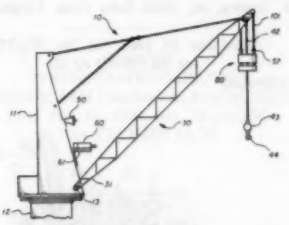
(d) horizontal shelf panels extending transversely of and supported on said crossbars.

4,424,909

CRANE BOOM WARNING ACTUATOR

Ned A. Bergeron, Houma, La., assignor to B.W.B. Controls, Inc., Houma, La.

Filed May 21, 1981, Ser. No. 266,112
Int. Cl.³ B66D *1/56*
U.S. Cl. 212—153 **8 Claims**



1. A warning system for use on a crane wherein said crane includes a movable boom, and at least one movable weight bearing line, said system comprising:

a. a source of fluid under pressure;

b. a pressure activated signal emitting device;

c. a plurality of signal device actuators positioned in substantially unrestricted pressure communication with said source and device;

d. each of said actuators having a housing and a valve body mounted in said housing for longitudinal movement therein and shiftable between a first position permitting pressure communication between said source and device and a second position blocking such communication, wherein one of said actuators further comprises:

i. first and second body portions, each including means for passing said line therethrough, one of said body portions providing said actuator's housing and the other of said body portions having a weight engageable portion; and

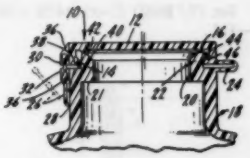
ii. means for causing engagement between said weight and said weight engageable portion to shift said valve body to said first position.

4,424,910

CHILD RESISTANT CAP HAVING CAP RETENTION AND CAM SURFACES

Alois R. Heinol, Bensenville, Ill., assignor to Knight Engineering & Molding Co., Arlington Heights, Ill.

Filed Sep. 7, 1982, Ser. No. 415,388
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—216 **5 Claims**



1. A child resistant plastic cover assembly for a container, comprising:

a generally circular cap having an inwardly projecting lip on the underside thereof;

a tubular body portion having an outlet surrounded by a lip, the cap closing the outlet with the cap lip engaging the lip of the body portion when the cap is seated on the body portion;

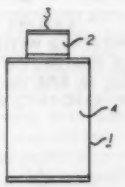
the tubular body portion lip having a first inclined surface facing outwardly and upwardly from the body portion, and a second inclined surface contiguous to the first surface, the second inclined surface facing outwardly and downwardly from the body portion and forming an undercut, the first and second surfaces intersecting at a junction line which is inclined with respect to the outlet of the body portion such that the undercut forms a cap retention means while the first surface forms a cap seating means for seating the cap on said retention means.

4,424,911

CONTAINER TAMPER DETECTION DEVICE

Joseph A. Resnick, Natrona Heights, Pa., assignor to Kenneth R. Bowers, Bryn Mawr, Pa.

Filed Dec. 10, 1982, Ser. No. 434,838
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—365 **10 Claims**



1. A container having:

(a) at least one strip of pliable material affixed to an outside surface of said container;

(b) a plurality of fragile microspheres attached to said strip;

(c) a substance contained within said microspheres which when released from said microspheres caused by destruction of said microspheres by pressure on said strip and upon interaction with said strip, initiates a color change within said strip.

4,424,912
CONTAINER WITH EXTENDABLE LEGS

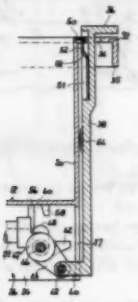
Rudolf Bieri, Lindenstrasse 23, CH-8400 Winterthur, and Jakob Klaeui, Burgstrasse 6, CH-8408 Winterthur, both of Switzerland

Continuation of Ser. 23,196, filed as PCT CH 78/00008, Aug. 17, 1978, published as WO 79/00048, Feb. 8, 1979, § 102(e) date

Claims priority, application Switzerland, Jul. 19, 1977, 8932/77

Int. Cl.³ B65D *25/00;* A47B *3/08*

U.S. Cl. 217—122 3 Claims



1. A collapsible basket, comprising a container having a top portion defining a peripheral flange with a horizontal base, a peripheral wall extending upwardly from around said base to said flange, and a peripheral skirt extending downwardly around the base to form an open-bottomed leg-storage region; a plurality of elongated legs connected in the container in the range of said leg-storage region for pivotal movement under the influence of their own weight and displacement in vertical direction; manually operable actuating means adjacent to the container and being coupled to the legs, said actuating means being operable between an erected position in which the legs extend downwardly from the base to support the container and a collapsed position in which the legs extend generally parallel to the base within the leg storage region, whereby the container can rest upon the skirt when the actuating means are in the collapsed position; locking means arranged on the container and on the actuating means to lock the actuating means in said collapsed position; and safety means arranged on said base and defining an upright recess for arresting said legs in their downwardly extended position when the actuating means are in the erected position and the container is set down, and for releasing the legs by relative axial movement of said legs away from the recess upon lifting said container.

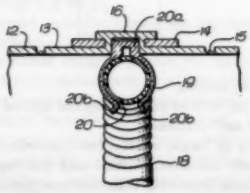
4,424,913
BEVERAGE CONTAINER WITH INTEGRAL STRAW

Duk H. Ko, 4526½ St. Elmo Dr., Los Angeles, Calif. 90019

Filed Aug. 30, 1982, Ser. No. 412,610

Int. Cl.³ A47G *19/22;* B65D *25/38*

U.S. Cl. 220—90.2 7 Claims



1. An improved packaging system for beverages, the system comprising a beverage container having, at a top portion, a pull tab and a pull ring; said pull tab and pull ring being joined by anchoring means; wherein when separated along the weakened seam said ring cooperates with said tab to produce a drinking opening in said container top portion;

an integral, flexible, resilient, tubular drinking straw disposed internally of said beverage container; and

a resilient collar member disposed on the underside of said tab for holding said drinking straw in a deformed condition internally of said container when said pull tab is not separated from said container top portion;

said collar member comprising a top collar portion which is received and joined within a hollow disposed in the underside of said anchoring means, said collar member further comprising two resilient legs to surround a majority of the circumferential surface of said tubular drinking straw except for a minor portion sufficient to enable said drinking straw to slip therethrough;

said retaining collar member being of a diameter sufficient to receive and to substantially envelope an upper portion of said drinking straw when threaded through said collar member; wherein said retaining collar member cooperates with said drinking straw to hold said straw in a deformed condition when said pull tab is not separated from said container top portion and causes automatic emergence of said drinking straw when said pull tab is separated from said container top portion.

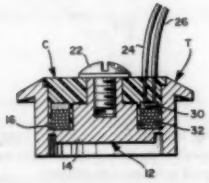
4,424,914
AIR BAG EXPLOSIVE DEVICE

Milton F. Brown, Jr., 2035 Echo Cove, Virginia Beach, Va. 23454

Filed Jun. 24, 1982, Ser. No. 391,975

Int. Cl.³ B65D *41/00*

U.S. Cl. 220—261 53 Claims



10. A completely separable seal for a container opening having a throat with a restriction therein including:

(a) a casing;

(b) an explosive charge in said casing;

(c) a projectile tethered to said casing;

(d) said projectile including a thin completely separable peripheral diaphragm for closing said container throat having upper and lower surfaces;

(e) said charge mounted against said upper surface;

(f) means on said seal for engaging said throat restriction when said charge has been fired to subsequently limit downward thrust of said projectile into said container after complete separation of said diaphragm from said container throat to thus permit said projectile to reverse direction as the upward explosive forces overcome the downward explosive forces to thus propel the casing and tethered projectile from the container throat thus opening the container.

4,424,915

LID-LATCHING AND PRESSURE RELIEVING DEVICE FOR A STEAM PRESSURE COOKER

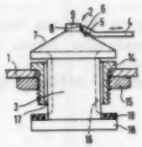
Walter Horn, Idar-Oberstein, Fed. Rep. of Germany, assignor to Fissler Gesellschaft mit beschrankter Haftung, Idar-Oberstein, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,523

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3112993

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—316 21 Claims



1. A lid-latching and pressure-relieving device for a steam pressure cooker, the device enabling the lid to be latched onto a saucepan of the cooker and having a valve to relieve pressure in the cooker, the pressure-relief and lid-latching functions of the device being so coupled that said valve is operatively connected to an actuating member for unlatching the lid, the valve being responsive to pressure in the cooker when the lid is latched on the saucepan and being movable by said actuating member from a first position, in which the lid is latched on said saucepan and pressure exists in the cooker to enable cooking under pressure to take place, to a second position in which pressure in the cooker can be released through said valve without unlatching the lid, and to a third position in which the lid can be unlatched by said actuating member, said third position only being attainable after discharge of the pressure in the cooker.

4,424,916

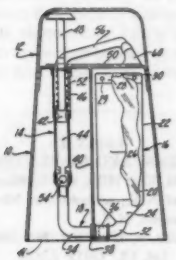
TOOTHPASTE DISPENSER

Donald L. Pearson, 2449 Candlewick, Pontiac, Mich. 48055

Filed Jun. 11, 1981, Ser. No. 272,768

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—74 5 Claims



1. An apparatus for dispensing toothpaste onto a toothbrush comprising: a housing adapted to be supported on a horizontal surface and having an open bottom end giving access to the contents therein and a closed top end, an elongated toothpaste container removably disposed vertically in said housing and having a rigid outer casing and a collapsible inner lining containing toothpaste with an outlet at its lower end, breathing holes in said casing to prevent formation of a vacuum within the casing upon collapse of said lining upon removal of toothpaste from said outlet, a reciprocating pump disposed vertically in said housing in side by side relationship with said toothpaste container, said pump having an inlet at its lower end, a conduit communicating said inlet and said outlet below the level of said toothpaste container and said pump, a vertically stationary discharge spout communicating with said pump and being disposed above the level of said pump and container, said spout being pivotal horizontally between discharge and storage positions, said pump being actuated for removal of toothpaste from said lining and delivery of toothpaste through said discharge spout.

4,424,917

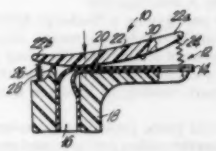
SELF-CLEANING VALVE

Richard F. Berger, Huntington; Greg Pardes, New York, and Bernard R. Gerber, Jamaica, all of N.Y., assignors to The Reseal Container Corporation of America, New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,255

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—103 8 Claims



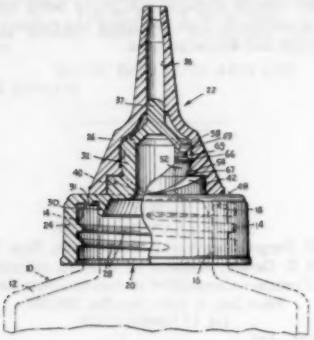
1. Self-cleaning valve for use at the outlet of a container for dispensing a material from the valve and comprising an axially elongated flexible flattenable tube having an inlet end through which the material enters the valve and an outlet end from which the material is dispensed after passing through said tube, said tube having an at-rest condition and a dispensing condition, said tube forming a passageway extending between said inlet end and said outlet end, said tube having an axially extending first section extending from said outlet end toward said inlet end and an axially extending second section extending from the end of said first section spaced from said outlet end to said inlet end, said first section having a first side and an opposite second side, a housing forming a support surface for said first side of said first section of said tube, said support surface extending in the axial direction of said first section and having a first end adjacent said outlet end and a second end spaced in the axial direction of said first section from said outlet end, said housing having a projection extending therefrom outwardly beyond said support surface and the surface of said projection extending outwardly beyond said support surface forming a fulcrum, a closure-cleaning lever member extending in the axial direction of said first section and located on the opposite side of said first section from said support surface and disposed in contact with said second side of said first section, said lever member having a first end located adjacent said outlet end of said tube and a second end extending beyond the second end of said support surface, said lever member is pivotally supported on said fulcrum intermediate the first and ends thereof so that it can be pivoted and maintained in moving contact with said second side of said first section of said tube between the first and second ends of said first section so that in the at-rest condition said first section is in the flattened state cleared of the material to be dispensed and in the dispensing condition said first section is opened from the flattened state so that the material to be dispensed can pass through said first section.

4,424,918

NON-RESEALABLE DISPENSER CAP CONSTRUCTION

Gene Stull, 5 Oak St., Chester, N.J. 07930

Filed Oct. 16, 1981, Ser. No. 312,147
Int. Cl.³ B67B 5/00
U.S. Cl. 222—153 22 Claims



1. A non-resealable dispenser cap construction for a container, comprising in combination:

(a) a cap body part having a discharge opening,

(b) an orifice part having sealing means, movable on the cap body part between sealing and unsealing positions,

(c) cooperable yieldable retainer means on the cap body part and orifice part, tending to hold the latter in its sealing position,

(d) means on said parts, providing a one-way-drive thread operable when the orifice part is turned to shift it and clear the discharge opening, said thread being inoperable to return the orifice part to re-seal the dischrge opening, and

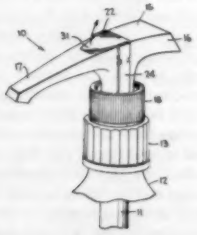
(e) interference means on the cap body part and orifice part for normally preventing the latter from shifting to its sealing position once it has been moved therefrom, thereby normally preventing the container from being re-sealed.

4,424,919

DISPENSER HAVING PLUNGER LOCKING MEANS

Donald E. Knox, New Providence, N.J.; Douglas F. Corsette, Los Angeles, and Ronald A. Meyer, San Dimas, both of Calif., assignors to Diamond International Corporation, New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,897
Int. Cl.³ B67D 5/42; B65D 47/34
U.S. Cl. 222—153 14 Claims



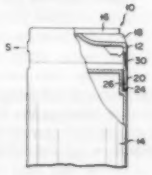
1. In a container mounted dispensing pump of the type in which the pump cylinder is fixedly supported within the container by a container cap surrounding the cylinder, a collar on said cap, a pump plunger projecting outwardly of the cylinder for actuation by intermittently applied pressure on its upper end, said plunger including a discharge outlet above the container, the combination with said pump of means for locking said plunger against reciprocation, said means acting between said plunger and said collar comprising a strap overlying said plunger, means on said collar defining a locking ledge, said strap including means engaging said ledge and having means for severing said strap to thus unlock said plunger and permit plunger reciprocation.

4,424,920

PUSH-BUTTON TYPE SPRAYER

Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 249,100
Claims priority, application Japan, Jun. 17, 1980, 55-83687[U]; Aug. 18, 1980, 55-116487[U]
Int. Cl.³ B65D 83/00
U.S. Cl. 222—402.11 9 Claims



1. In a push-button type sprayer mechanism comprising a movable push button attached to a container containing a liquid to be sprayed,

the improvement comprising:

a seesaw-type stopper formed integrally with said push button through a pair of spaced-apart connecting pieces which are integrally formed as one piece with both said stopper and said push button, said stopper having ends and extending between said ends along a direction in which said push button is movable, said connecting pieces being interposed between said stopper and said push button at a portion of said stopper intermediate the ends of said stopper, and said stopper being pivotable around said pieces between a first position at which spraying of said liquid is permitted and a second position at which spraying of said liquid is prevented; and

a recess formed in the outer peripheral surface of said container to contain said stopper, said recess having a shoulder portion on which said stopper abuts when in said second position to prevent movement of said push button, thereby preventing spraying of said liquid in said container.

4,424,921

MEASURED DISPENSER

Andrew E. Feuerstein, East Hills, and Michael F. Aprea, Franklin Square, both of N.Y., assignors to Measure Control Devices, Inc., Hempstead, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,575
Int. Cl.³ G01F 11/28
U.S. Cl. 222—456 14 Claims

1. An apparatus for dispensing a measured quantity of material, comprising:

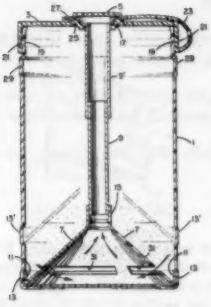
a container having an annular channel in its side(s), said channel being proximate the bottom of said container;

a measuring funnel having an inlet at its outwardly flaring end, and a collar-like outlet at the termination of its inwardly flaring end, said funnel further having an apron-like rim around the circumference of its inlet, said funnel and said rim being dimensioned for permitting the rim to be "snapped into" said channel of said container, thereby rigidly holding said funnel in position in said container;

a tube having one end inserted into and rigidly held by the collar of said funnel; and

a top for said container, said top including means for rigidly securing the other end of said tubing through the central portion of said top;

said funnel having its inlet facing the bottom of said container, said funnel further including a plurality of openings

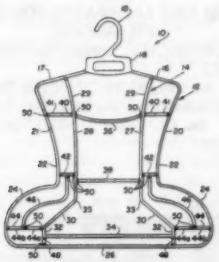


or holes in substantially the same plane spaced around its sloping sides, whereby material placed in said container above said funnel flows through said openings to form a volume of said material between the plane of the holes of said funnel and the bottom of said container, the ultimate volume of said material so formed being a measured amount for dispensing via said tube when said container is turned over.

4,424,922
RESHAPABLE THREE DIMENSIONAL PLASTIC GARMENT HANGER

Jack M. Zuckerman, and Andrew M. Zuckerman, both of 110-11 Queens Blvd., Forest Hills, N.Y. 11375

Filed May 24, 1982, Ser. No. 381,061
Int. Cl.³ A47J *51/096*
U.S. Cl. 223—88 **19 Claims**



1. A reshapable three dimensional plastic garment hanger comprising:

rear and front garment hanger sections molded together to form an initial three dimensional shape which includes laterally directed shoulders and sides depending from each of said shoulders on said rear garment hanger section,

said front garment hanger section including sides depending from and extending forward thereof and of said rear garment hanger section and defining the bust portion of the garment hanger corresponding in shape to that of the bust of a garment to be hung on said garment hanger,

struts molded unitary with and releasably connecting said front and rear sections from undesired relative movement,

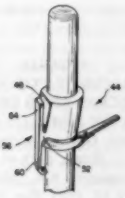
said sections being flexible and relatively movable and said struts connecting said sections from undesired relative movement and in spaced relationship with selected ones of said struts being releasable to enable at least related released portions of said sections to be moved relative to each other from their molded fixed spaced relationship such that they may be selectively changed from their initial molded shape to a new shape corresponding to that of a different garment that is to be hung thereon at the site of display of such different garment so that the attractive details of said different garment hanger may be displayed thereon,

and means on said garment hanger to suspend the same from a support.

4,424,923
BATON AND CLUB SECURING DEVICE

Dennis M. Bingham, 105 W. 700 North, Bountiful, Utah 84010

Filed Sep. 29, 1982, Ser. No. 426,267
Int. Cl.³ F41B *15/02*
U.S. Cl. 224—251 **18 Claims**



1. A device for detachably securing a baton or the like in a carrying ring through which the baton may be slidably inserted, said device comprising:

a base section attachable to the sides of the baton, said base section including an enlarged portion for contacting the ring when the baton is inserted through the ring to support the base section and baton and prevent the baton from passing through the ring, and

lever means fixed to the base section and having a downwardly projecting hook element which is movable between a first position, wherein the hook element is disposed to engage the ring and prevent removal of the baton from the ring when the baton is lifted, and a second position, wherein the hook element is disposed so as not to engage the ring when the baton is lifted.

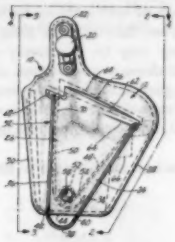
4,424,924
HOLSTER WITH MOUNTING SPRING

Neale A. Perkins, Bradbury, Calif., assignor to Safariland Ltd., Inc., Monrovia, Calif.

Filed Jul. 24, 1981, Ser. No. 286,691
Int. Cl.³ F41B *13/04*
U.S. Cl. 224—252 **12 Claims**

1. A holster or the like having a carrying case with an inner face to be located adjacent to the body of a user wearing the case; a mounting spring secured to and overlying the exterior of the inner face of the case, the mounting spring being under tension applying a spring force against the inner face of the case, in which the mounting spring is a wire rod having exterior legs forming a generally U-shaped exterior mounting portion and interior legs forming an interior fastening portion of the spring, the spring bearing bent so the interior legs normally intersect the plane of the exterior legs when the spring is in its unbiased position; and means securing the fastening portion of the mounting spring to the inner face of the holster case so that the exterior legs are held away from said normal position and in stiff tension against the inner face of the case, the lower portion of the U formed by the exterior mounting spring

being located generally near the bottom of the case, the exterior legs of the spring being movable against their bias away



from the inner face of the case to form a narrow gap for receiving clothing or the like to which the case is releasably attached by the tension of the mounting spring.

4,424,925

PROCESS AND MACHINE FOR SIMULTANEOUSLY CUTTING OFF EXCESS ENDS OF HOLLOW GLASS, PLASTIC OR SIMILAR ARTICLES

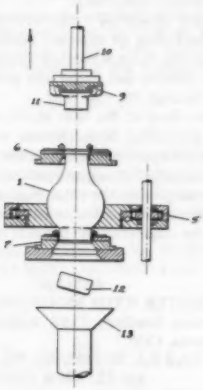
Hugo Rumayor-Aguirre, Garza Garcia; Abel Gomez-Sanchez, and Jesus Viramontes-Romo, both of Monterrey, all of Mexico, assignors to Cristaleria, S.A., Monterrey, Mexico

Filed May 12, 1981, Ser. No. 263,004

Claims priority, application Mexico, May 15, 1980, 182338

Int. Cl.³ C03B *33/06*

U.S. Cl. 225—2 **15 Claims**



1. A process for simultaneously cutting both excess end portions from hollow articles of glass, plastic and similar articles, and comprising in combination, the steps of: retaining and holding rotatingly a semi-finished article by a portion intermediate its ends; rotatingly retaining and holding at least one of the excess end portions of the semi-finished article, in synchronism with the rotating retention and holding of the intermediate portion thereof; simultaneously cutting off both excess end portions of the article while exerting a slight pull at a predetermined rate of movement in synchronism with the cutting upon said at least one of the rotatingly retained excess end portions; and upon completion of the cutting stage, removing the finished article from its retainment, and then releasing the at least one excess end portion to drop into a scrap collector.

4,424,926

ROLL DISPENSER

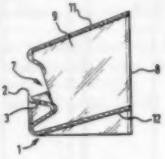
Douglas K. Gatward, 1212, Great Cambridge Rd., Enfield, Middlesex, England

Filed Aug. 19, 1981, Ser. No. 294,294

Claims priority, application United Kingdom, Aug. 20, 1980, 8027157

Int. Cl.³ B65D *85/671*

U.S. Cl. 225—26 **6 Claims**



1. A dispenser suitable for rolled cling film, adapted to be removably attached to a vertical surface consisting of a one-piece construction having no moving parts comprising a container **1** which can enclose a roll of cling film, said container having a first fixed widthwise aperture **7** at the front through which material on the roll can be withdrawn, an upwardly-directed cutter **2** integral with the container **1** adjacent the first aperture **7** for severing from the roll a piece of the film, a second widthwise aperture **8** at the back through which the dispenser can be loaded with a roll and means **4,6** for removably attaching the dispenser to a vertical surface positioned such that, in use, the vertical surface closes said second aperture **8** characterized in that there is means defining a planar surface **3** adjacent to and behind the cutter **2**, the plane of which is disposed at an angle to the plane of the cutter **2** to which an end portion of the film between the roll and the cutter is adapted to cling prior to withdrawal for severing for holding the end portion of the film properly positioned to be grasped for withdrawal and severing and from which it can be released for withdrawal and severing.

4,424,927

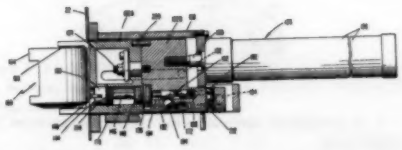
METHOD AND APPARATUS FOR GUIDING FILAMENTS

Max L. Cardell, Shelby, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Division of Ser. No. 199,293, Oct. 21, 1980, Pat. No. 4,340,341. This application Mar. 31, 1982, Ser. No. 363,996

Int. Cl.³ B65H *51/00, 57/00*

U.S. Cl. 226—199 **11 Claims**



1. A guide for enclosing a group of traveling filaments arranged in a pattern forming a main longitudinal axis, said guide comprising:

a carrier movable toward and away from the filament group,

a plurality of relatively movable members mounted on said carrier for movement between open and closed positions, said members forming a through-passage for the filament group in the closed position; and

actuating means operatively connected to said carrier and members for:

extending said carrier toward the filament group,

closing said members around the filaments to converge the filaments, and

retracting said carrier to a position where a longitudinal axis of said through-passage is substantially aligned with the main longitudinal axis formed by the filament group.

4,424,928

SHOE SUPPORT FOR HEEL ATTACHING MACHINE

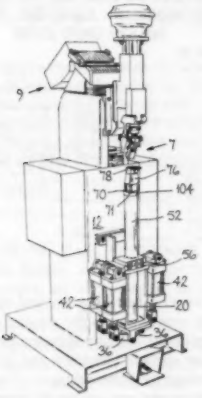
Albert E. Lovett, Melton Mowbray, England, assignor to USM Corporation, Farmington, Conn.

Filed Mar. 10, 1982, Ser. No. 356,897

Claims priority, application United Kingdom, Mar. 11, 1981, 8107637

Int. Cl.³ A43B *21/36*; A43D *69/02*

U.S. Cl. 227—28 **10 Claims**



1. A shoe support for supporting a shoe to have a heel attached thereto in a heel attaching machine, the support comprising:

a generally planar support surface against which the heel seat region of a shoe can be located so that a nail can be driven through the heel seat region into a heel positioned thereon to attach the heel to the shoe;

a pusher member movable within the support normally to the support surface;

a nail guide formed in the support and opening through the support surface, the nail guide being inclined to the normal to the support surface so that a nail can be located in the guide to be driven into the heel seat region and the heel at an inclination to the normal to the heel seat region;

a driver movable in the nail guide, one end portion of the driver resting on the pusher member and an opposite end portion of the driver being engageable with a nail positioned in the nail guide so that movement of the driver in the nail guide causes the nail to be driven as aforesaid, wherein movement of the pusher member causes said movement of the driver along the nail guide, the arrangement being such that during movement of the pusher member, relative sliding movement takes place normally to the direction of movement of the pusher member, between the pusher member and the driver; and

wherein each pusher member is arranged to be moved normally to the support surface by an individual moving arrangement therefor and the moving arrangements are arranged to operate one-after-the-other so that in the operation of the support, nails are driven into the heel seat region and the heel one or two at a time.

4,424,929

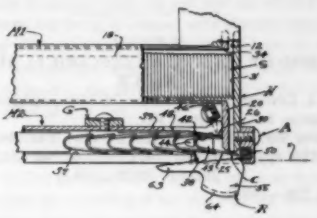
CLIP MAGAZINE FEED FOR FASTENER DRIVING TOOLS

Charles W. Weis, Los Angeles, Calif., assignor to Power-Wire Fastener Systems, Inc., El Monte, Calif.

Filed Mar. 16, 1982, Ser. No. 358,539

Int. Cl.³ B25C *1/04, 5/16*

U.S. Cl. 227—32 **36 Claims**



1. A clip feed for a fastener driving tool with a driveway through a head having a rear face projecting to a driving plane offset from a first magazine means and through which driveway a driver blade reciprocates to sever a fastener from a supply thereof advanced by said first magazine means and to deliver the same through said driving plane and into a work piece, a plurality of clips each of which being of U-shape with a lower forwardly extending mounting leg of greater length than an overlying upper leg for vertical exposure of an opening through the lower mounting leg, and including; a second magazine means underlying the first magazine means and open to the rear face of the head to sequentially deliver a nested stack of said clips and the upper leg of the foremost clip thereof into stopped engagement with said rear face of the head and with the lower mounting leg underlying the head and the opening therethrough substantially aligned with the driveway through the head, gripper means preventing retraction of said foremost clip from said stopped engagement with the head, a normally advanced retraction means withdrawing the stack of clips from the foremost clip when positioned relative to the work piece for application of the clip thereto, and means operating the driver blade to sever and deliver a fastener through the opening in the lower mounting leg of the foremost clip and fastening the same onto the work piece.

4,424,930

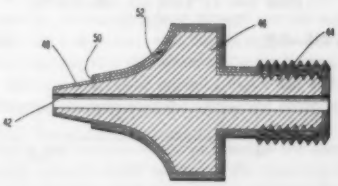
CARBON-BASED SOLDERING AND DE-SOLDERING TIP AND METHOD OF MANUFACTURING SAME

Jack L. Wilhelmson, Cheraw, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 29, 1981, Ser. No. 278,408

Int. Cl.³ B23K *3/02*

U.S. Cl. 228—20 **18 Claims**



1. A tip for a soldering iron or a de-soldering tool comprising:

a body of carbon-based material having an attachment portion, an intermediate portion adjoining said attachment

portion, and a solder-wetting portion adjoining said intermediate portion,

first means coated on at least said solder-wetting portion for providing a wettable working surface, and

second means coated over at least said intermediate portion, but not said solder-wetting portion, for localizing the wettable working surface and impeding the upward flow of solder along said intermediate portion and toward said attachment portion.

4,424,931

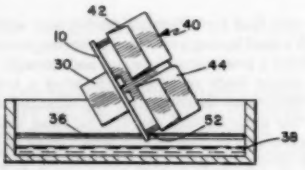
METHOD OF MAKING AN ELECTRICAL ADAPTOR BLOCK

Rodger T. Lovrenich, Santa Teresa, N. Mex., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 238,691, Feb. 27, 1981, Pat. No. 4,385,791. This application Oct. 20, 1982, Ser. No. 435,354

Int. Cl.³ B23K *1/08*

U.S. Cl. 228—180 R **2 Claims**



1. The method of soldering a pluality of electrical components having protruding pin means to a single-sided printed circuit board means having conductive path means on one side connecting inner connection pad means with outer connection pad means located toward the edge of the board, comprising the steps of:

positioning a first electrical component on the side of the printed circuit board means opposite the conductive path means with its pin means extending into said inner connection pad means and soldering said pin means to said inner connection pad means;

thereafter positioning another electrical component on said printed circuit board means on the same side as said electrically conductive path means with its pin means extending into said outer connection pad means to form an assembly;

and thereafter passing the assembly through a solder bath with the assembly tilted at an angle that positions the outer connection pad means and associated pin means to pass through said solder bath without either of the electrical components contacting said solder bath.

4,424,932

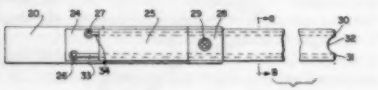
ELECTRIC SHOCK PROD

Gerald F. Allen, 4743 Brooks St., Montclair, Calif. 91763

Filed Mar. 19, 1982, Ser. No. 359,790

Int. Cl.³ F41B *15/04*

U.S. Cl. 231—2 E **22 Claims**



1. An electric shock prod apparatus, comprising:

circuit means for producng high-voltage electrical pulses;

a housing mounting said circuit means;

a prod extension attached to said housing and extending from said housing in a fixed, predetermined direction with respect to said housing, said extension comprising: a beam, said beam being elongated in said direction and terminating in a free end, said beam being flat with a large width-to-thickness ratio and being made from a stiff, non-pliable, material having high flexural strength and buckling resistance; and two eletrodes attached to said beam and spacedly supported thereby, said electrodes extending along said beam and being exposed at portions of said beam and being connected to said circuit means for transmitting said pulses to said exposed portions for delivering a shock to a subject contacted by said exposed portions.

4,424,933

VEHICLE HUMIDITY CONTROL APPARATUS FOR PREVENTING FOGGING OF WINDOWS

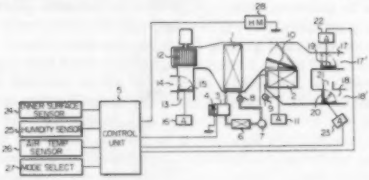
Shinji Sutoh; Seizi Sumikawa; Shinichi Kaneko, all of Konan, and Toshizo Hara, Higashi Matsuyama, all of Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,430

Claims priority, application Japan, Oct. 20, 1979, 54-135536

Int. Cl.³ G05D *21/00*

U.S. Cl. 236—44 A **3 Claims**



1. A vehicle interior humidity control apparatus including interior humidity sensor means for sensing an interior humidity, window interior surface humidity sensor means for sensing a window interior surface humidity and interior humidifying means, characterized by comprising:

system control means responsive to outputs of the interior humidity sensor means and inner surface humidity sensor means for controlling the humidifying means in such a manner that when the inner surface humidity is below a first predetermined value the humidifying means is operated to increase the interior humidity to within a predetermined range and when the inner surface humidity is above the first predetermined value the humidifying means is de-energized;

the humidifying means being energized when the interior humidity drops below the predetermined range and de-energized when the interior humidity rises above the predetermined range; and

interior air control means, the system control means controlling the air control means in such a manner that when the inner surface humidity is above a second predetermined value which is higher than the first predetermined value the air control means is operated to decrease the interior humidity.

4,424,934

HOT WATER HEATING SYSTEM

Murray O. Wilhoite, 121 Creekwood Cir., Florence, Ala. 35630

Filed Apr. 6, 1981, Ser. No. 251,859

Int. Cl.³ F24H *3/06*

U.S. Cl. 237—7 **5 Claims**

1. A hot water heating system comprising:

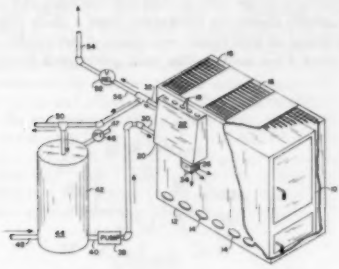
a combustion type heater having a combustion chamber, a jacket around said chamber, and an air inlet in said jacket for the introduction of air to be heated;

an enclosure attachable to a side of said jacket, an entrance opening in said jacket to an upper region of said enclosure, and an exit opening at a lower region of said enclosure;

an air-water heat exchanger within said enclosure and posi-

tioned to intercept air flow between upper and lower regions of said enclosure;

an electrically powered fan positioned to draw air through said entrance opening in said jacket, through said heat exchanger, and out said exit opening;



temperature sensing switching means for sensing the temperature in said enclosure and operating "on" said fan at a temperature above a selected level; and

second temperature sensing means for sensing the temperature of water flowing through said heat exchanger and operating "off" said fan at a temperature above a selected value.

4,424,935

SPRING RAIL FASTENER

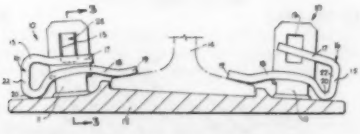
William F. Langman, Belair; Leslie J. Diener, Torrens Park, and Jack Clark, Reynella, all of Australia, assignors to Omark Industries, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 28,216, Apr. 9, 1979, abandoned. This application Jul. 31, 1980, Ser. No. 173,917

Claims priority, application Australia, Apr. 14, 1978, PD4031; Jun. 1, 1978, PD4572; Mar. 28, 1979, 45550

Int. Cl.³ E01B *9/34, 9/48, 29/24*

U.S. Cl. 238—349 8 Claims



1. A rail fastener for fastening a rail to a steel rail support, comprising:

a rectangular section retaining block adapted to be stud welded to the rail support and upstanding therefrom with the longitudinal axis of the retaining block positioned perpendicular to the longitudinal axis of the rail;

an aperture extending through the retaining block transverse to the longitudinal axis thereof and in the same direction as the longitudinal axis of the rail, the aperture including two side walls, a lower wall and an upper wall;

a resilient fastener clip having a back portion, an upper leg having an upper surface and bifurcated at one end to define a first pair of toes and interconnected to the back portion at its opposite end by a first heel portion, a lower leg bifurcated at one end to define a second pair of toes at one end and interconnected to the back portion at its opposite end by a second heel;

a rectangular locating aperture of dimension complementary to the rectangular section retaining block formed in at least one of the legs of the resilient fastener clip, the longitudinal dimension of which extends parallel to the longitudinal axis of the leg and adapted to receive the retaining block to locate the fastener clip with respect to the retaining block to inhibit both relative rotational and translational movement of the fastener clip relative to the retaining block;

the angulation of the first and second heels in their interconnection with the back portion and with the first and second legs being such that, when the clip is in place upon the retaining block and the second pair of toes of the second leg being in contact with the rail and the second heel of the second leg being in contact with the rail support, the first leg of the retaining clip will extend above the bottom wall of the aperture within the retaining block and at an angle inclined to the perpendicular axis of the retaining block when at rest; and

a retaining pin adapted to extend through the aperture in contact with the upper surface of the upper leg and the upper wall of the aperture to apply a resultant downward force upon the upper leg of the clip with the retaining pin is in place within the aperture to thereby stress the clip and apply downward pressure of the second pair of toes upon the rail and second heel upon the rail support to secure the rail in place.

6. A rail fastener for fastening a rail to a steel rail support, comprising:

a rectangular section retaining block adapted to be stud welded to the rail support and upstanding therefrom with the longitudinal axis of the retaining block positioned perpendicular to the longitudinal axis of the rail;

an aperture extending through the retaining block transverse to the longitudinal axis thereof and in the same direction as the longitudinal axis of the rail, the aperture including two side walls, a lower wall and an upper wall;

a resilent fastener clip having a back portion, an upper leg having an upper surface and bifurcated at one end to define a first pair of toes and interconnected to the back portion at its opposite end by a first heel portion, a lower leg defining a toe at one end and interconnected to the back portion at its opposite end by a second heel;

a rectangular locating aperture of dimension complementary to the rectangular section retaining block formed in at least one of the legs of the resilient fastener clip, the longitudinal dimension of which extends parallel to the longitudinal axis of the leg and adapted to receive the retaining block to locate the fastener clip with respect to the retaining block to inhibit both relative rotational and translational movement of the fastener clip relative to the retaining block;

the angulation of the first and second heels in their interconnection with the back portion and with the first and second legs being such that, when the clip is in place upon the retaining block and at rest, and the second heel of the second leg is in contact with the rail and the toe of the second leg is in contact with the rail support, the first leg of the retaining clip will extend above the bottom wall of the aperture within the retaining block and at an angle inclined to the perpendicular axis of the retaining block; and

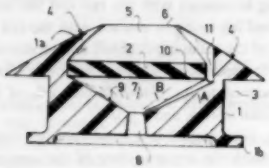
a retaining pin adapted to extend through the aperture in contact with the upper surface of the upper leg and the upper wall of the aperture to apply a resultant downward force upon the upper leg of the clip when the retaining pin is in place within the aperture to thereby stress the clip and apply downward pressure on the second heel upon the rail and toe upon the rail support to secure the rail in place.

4,424,936

DRIP-IRRIGATION EMITTER FOR MOUNTING ON A LIQUID SUPPLY-CONDUIT

Dumont Marc, 4 place de l'Aigoual, 31770 Colomiers, France

Filed Feb. 18, 1982, Ser. No. 349,854
Claims priority, application France, Feb. 26, 1981, 81 04071
Int. Cl.³ B05B 15/06
U.S. Cl. 239—271 12 Claims



1. A drip-irrigation emitter for mounting on a liquid supply conduit perforated with a suitable orifice, said emitter comprising:

a body (1) having an inside chamber opening to either side of said body through a liquid intake aperture (6) and a liquid discharge aperture (8), said body (1) being externally provided at its periphery with means (3,4) for fixing said body to said conduit,

an elastic membrane (2) having a peripheral rim positioned within said chamber so as to divide it into upstream and downstream compartments (5, 7) from which issue respectively said intake aperture (6) and said discharge aperture (8),

said downstream compartment (7) being bounded by a wall (9) of said body converging from the rim of said membrane (2) toward the discharge aperture (8) and designed to act as a progressive support for the membrane during deformations,

said membrane being in the shape of a solid disk of elastic material and separating over its entire area said upstream compartment (5) from said downstream compartment (7), said membrane being kept in place throughout its periphery in such a manner that it may deform progressively under an increasing pressure in said conduit between first and second positions, said first position being that of said membrane at rest wholly detached from the converging wall (9), the second position being that wherein said membrane rests substantially against the entire surface of said convergent wall (9),

said convergent wall (9) containing at least one flow channel (10) issuing in the downstream compartment (7) and extending from the rim of said membrane (2) toward said liquid discharge aperture (8) whereby said channel (10) is covered by the elastic membrane (2) over a variable length depending on its deformation, from zero length covered for said first position in which the membrane is separated from said convergent wall (9) to a maximum covered length corresponding to said second position wherein the membrane rests against the entire surface of said convergent wall (9),

said at least one flow channel (10) connecting at said membrane (2) to a duct (11) in said body (1) and issuing into its upstream compartment (5).

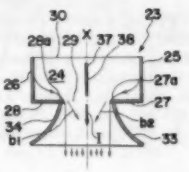
4,424,937

FLUID DEFLECTING ASSEMBLY

Motoyuki Nawa; Yutaka Takahashi, both of Nara, and Masaru Nishijo, Tenri, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 902,818, May 4, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,556
Claims priority, application Japan, May 7, 1977, 52-52276
Int. Cl.³ B05B 1/04
U.S. Cl. 239—590 1 Claim

1. A fluid deflecting assembly which comprises: a nozzle for issuing a main stream of fluid as the fluid passes therethrough, said nozzle having a relatively small thickness in the direction of flow of fluid therethrough as compared with the width thereof in the direction at right angles to the direction of flow of fluid therethrough, said nozzle being so shaped as to constrict the flow of the fluid as the latter passes therethrough, at least one guide wall at a position downstream of said nozzle and having a shape with at least the upstream end curved and substantially diverging outwardly from a plane perpendicular to the plane of said nozzle and opening outwardly in a direction away from said nozzle, said guide wall having the upstream end offset laterally outwardly from the downstream end of said nozzle, and a deflector blade in the form of a substantially elongated plate for controlling the mode of flow of the fluid and positioned with the downstream end thereof at a position upstream of the nozzle with respect to the direction of flow of the main stream of fluid and adjustably supported for deflecting the direction of flow of the main stream at any desired angle towards said guide wall, said guide wall being positioned for controlling the wall attachment of said main stream when the main stream is directed toward said guide wall.

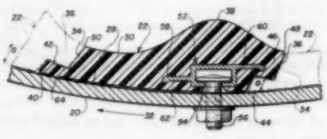


4,424,938

WEAR-RESISTANT LINER FOR ROTARY GRINDING MILLS

John T. Day, Westminster, Md., assignor to Rubber Millers Inc., Baltimore, Md.

Filed Dec. 11, 1981, Ser. No. 329,713
Int. Cl.³ B02C 17/22
U.S. Cl. 241—182 8 Claims



1. A composite liner for the drum of a rotary grinding mill comprising a series of similar elongated elastomeric liner panels adapted to extend axially of a drum having a circular cross-section and rotatable in a predetermined rotary direction, whereby said panels have leading and trailing sides relative to said direction of rotation and also a drum-engageable surface, said leading and trailing sides being of substantially the same thickness with respect to the drum-engageable surface but the leading side terminating in a stepped-down thin flange adapted to extend into a complementary recess in the drum-engageable surface of the trailing side of a succeeding panel when connected to said drum and thereby present substantially smooth adjacent material-engageable surfaces at the joints of said connected panels, the opposite material-engaging surface of said panels having a smoothly curved wave configuration extending upwardly in a gradual concave curve from the leading side of the panel and cresting nearer the trailing side than the leading side and then descending toward the trailing side in a shorter concave curve than the side of the wave

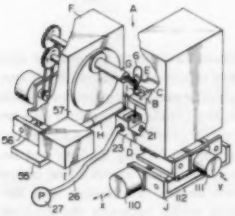
ascending from the leading side and blending with the gradual concave curve of the leading side of the next succeeding panel, the drum-engageable surface of each panel having a longitudinally extending recess provided with a central axis disposed substantially beneath the crest of the wave surface, and an elongated clamping member positioned in said recess and provided with a channel opening toward the drum-engageable surface of said panel to receive heads of clamping bolts to secure the panels to the drum, said clamping member having laterally extending ribs directed in opposite directions respectively toward said leading and trailing sides of the panels, said ribs being substantially parallel to said drum-engageable surface of said panels and offset different distances therefrom, the rib nearest the trailing side of the panel being spaced farther from said drum-engageable surface than the other rib and extending into the portion of the trailing side of said panel which overlies said recess in said trailing side to firmly clamp said stepped-down thin flange of the leading side of the succeeding panel against the inner surface of said drum.

4,424,939

APPARATUS FOR WINDING WIRE AROUND TOROIDAL CORE

Toshijiro Ohashi; Yasuhiro Yamaguchi; Michinaga Kohno, all of Yokohama, and Nobu Kamita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,620
Claims priority, application Japan, Apr. 22, 1980, 55-52266
Int. Cl.³ H01F *41/08*
U.S. Cl. 242—4 R **12 Claims**



1. An apparatus for winding a wire around a toroidal core formed with a center opening and having two opposite surfaces, the wire being of a predetermined length and having opposite end portions, comprising:

(a) support means for supporting said toroidal core;

(b) fixing means for fixing one end portion of said wire;

(c) gripper means for releasably gripping the other end portion of said wire;

(d) transfer means for moving said gripper means along a predetermined path;

(e) said transfer means including means for locating said gripper means in a first position where an extremity of the other end portion of the wire gripped by said gripper means is substantially in alignment with the opening of the core above one of said opposite surfaces of the toroidal core;

(f) pull-out means for gripping the other end portion of said wire beneath the other of said surfaces of the toroidal core and for partially pulling the wire axially from the opening;

(g) said transfer means further including means for moving said gripper means to a second position beneath said other surface of the core and from said second position to said first position after completion of a partial pull-out of the wire by said pull-out means; and

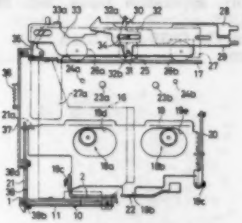
(h) tensioning means for imparting a tension to the wire while said gripper means is moved from said second position to said first position, for fully pulling out the partially pulled-out wire and for keeping a substantial portion of the fully pulled-out wire straightened in cooperation with said gripper means, whereby the wire is wound around the core without causing a bending of the wire of the type which might produce a kink.

4,424,940

REEL UNIT ROTATION STOPPING SENSING MECHANISM

Seiichiro Matsuki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,811
Claims priority, application Japan, Jan. 7, 1981, 56-892
Int. Cl.³ B65H *59/38*; G03B *1/02*; G11B *15/13*
U.S. Cl. 242—191 **3 Claims**



1. A reel unit rotation stopping sensing mechanism for a tape deck having reel shaft units engageable with a tape unit, comprising:

rotational arm means frictionally engaged with said reel shaft units;

a rotary mechanism rotatable around a predetermined axis;

drive means for imparting a rotational torque to said rotary mechanism; and

a link mechanism formed between free ends of said rotational arm means and said rotary mechanism for preventing the rotation of said rotary mechanism when at least one of said reel shafts is stopped in rotation,

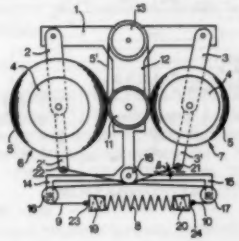
whereby the stopping in rotation of the reel shaft units is detected by a reaction torque caused in said drive means.

4,424,941

TAPE TRANSPORT APPARATUS HAVING A CENTRAL CAPSTAN

Klaus Schoettle, Heidelberg; Joachim Flohr, Viernheim, and Rolf Maerthesheimer, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,126
Int. Cl.³ G11B *5/008, 15/32*
U.S. Cl. 242—192 **7 Claims**



1. A tape transport appratus comprising two tape reels between which a tape can be wound to and fro; a drive capstan arranged between the tape reels; movably mounted supports on which the tape reels are rotatably mounted; biasing means,

acting on the supports, for bringing the peripheries of the tape reels into contact with the periphery of the drive capstan; and at least one movable counterweighting means, which is arranged in series with said biasing means, said at least one counterweighting means and said supports being connected together by flexible connecting means guided over rolls so that the mass inertias of said supports together with the tape reels and of the counterweighting means cancel each other out.

4,424,942

REWIND DEVICE

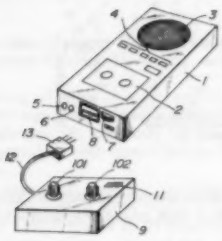
Masanobu Sato, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 302,027

Claims priority, application Japan, Sep. 16, 1980, 55-128386[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—200 **3 Claims**



1. A rewind device for rewinding a magnetic tape in a cassette for a tape recorder with a jack member comprising:

an idler, an electric motor for driving the idler, pulleys rotated by the idler, reel shafts secured to the pulleys and capable of rotating reels of the cassette, and a plug member connected to the motor, a switch between the plug member and the motor for switching the rotating direction of the motor, said plug member being arranged for receiving the jack member of the tape recorder and to energize the motor.

4,424,943

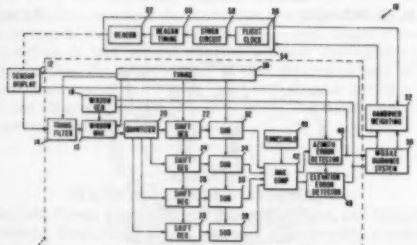
TRACKING SYSTEM

Robert Zwirn, and John W. Bozeman, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 4, 1981, Ser. No. 259,865

Int. Cl.³ F41G *7/30*

U.S. Cl. 244—3.11 **2 Claims**



1. A control system including a tracking unit for providing electrical signals indicative of the position of a vehicle relative to a predetermined frame of reference within a scene comprising:

means for providing radiant energy between said vehicle and the tracking unit during predetermined intervals of time, for indicating the position of said vehicle relative to the scene;

means for providing electrical signals representing successive frames of data corresponding to said scene at a first interval during which said radiant energy is received and a second interval during which said radiant energy is not received by said tracking unit; and

means for taking the difference between said successive frames of data to provide said signals indicative of the position of said vehicle relative to said predetermined frame of reference.

4,424,944

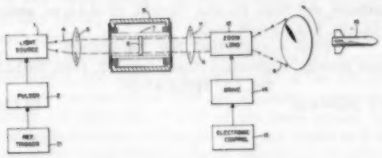
DEVICE TO SPATIALLY ENCODE A BEAM OF LIGHT

James A. Wes, Diamond Bar, and Raymond H. Ottoson, Garden Grove, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Continuation of Ser. No. 119,473, Feb. 7, 1980, abandoned. This application Nov. 26, 1982, Ser. No. 444,643

Int. Cl.³ F41G *7/26*

U.S. Cl. 249—3.13 **16 Claims**



1. An optical beam navigation system for determining the position of an object relative to a beam centerline, comprising:

a reticle rotating about a center of rotation coincident with the beam centerline, the reticle having first and second regions of which one region is transparent and the other region is opaque, the first region having leading and trailing boundaries which are symmetrical about a line extending radially from the reticle's center of rotation, and the first region having an angular width between the leading and trailing boundaries which varies progressively as a function of the radial distance from the center of rotation;

an optical beam projector for projecting a light beam through the reticle and along the beam centerline to the object and for maintaining an optical image of the reticle in focus near the object;

an optical receiver, positioned at the object, including means for measuring the two respective angular positions of the rotating reticle when the images of the leading and trailing boundaries pass over the object and means for determining the midpoint of said two measured angular positions, whereby the midpoint indicates the angular position of the object.

4,424,945

PARAFOIL

Simon C. Dell, Lodge Cottage, Badwell Ash, Bury St. Edmunds, Suffolk, England

Filed May 12, 1982, Ser. No. 377,239

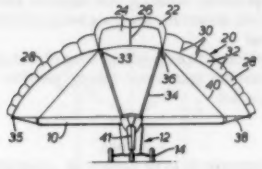
Claims priority, application United Kingdom, May 15, 1981, 8115041

Int. Cl.³ B64C *3/30, 31/02*; B64D *17/22*

U.S. Cl. 244—13 **9 Claims**

1. A parafoil comprising a forwardly extending central section open at its front end to collect air during flight, inflatable wings connected to extend laterally from the central section and having communication means for access of air to the interior thereof from the central section, a rigid structure beneath the parafoil, at least one restraining element attached from the rigid structure to the parafoil central section in front of the

wings for holding down the front end of said central section and maintaining the fore/aft position thereof relative to the wing tips during flight and at least one restraining element attached from the rigid structure to the outer terminal of each parafoil wing, the wings being unrestrained between the central section and their terminals so that lift on the wings therebetween is balanced by the tensile forces acting along the length of the wings primarily towards the tips thereof, the complete parafoil thus assuming an inverted U-shape in flight with the central section uppermost.

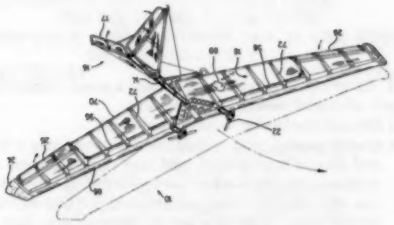


4,424,946

LIGHTWEIGHT AIRCRAFT

Dale C. Kramer, 300 Steele St., Port Colborne, Ontario, Canada L3K 4X8

Filed Nov. 4, 1980, Ser. No. 203,899
Int. Cl.³ B64C *19/02*
U.S. Cl. 244—13 **10 Claims**



1. An aircraft, comprising:

axially-extending fuselage means,

pilot cockpit means depending from said fuselage means adjacent a forward end thereof,

air foil-shaped wing means mounted to said fuselage means adjacent said forward end thereof and extending one on each side of said fuselage means transverse to said fuselage means,

each said wing means having aileron means mounted to a rear edge thereof for pivotal movement relative thereto,

tail means mounted to a rearward end of said fuselage means, said tail means being inverted V-tail means consisting of a pair of tail members defining an inverted V-shape when viewed along the aircraft axis and each depending from the fuselage means at an acute angle thereto,

each said V-tail member having control surface means mounted to a rear edge thereof for pivotal movement relative thereto, and

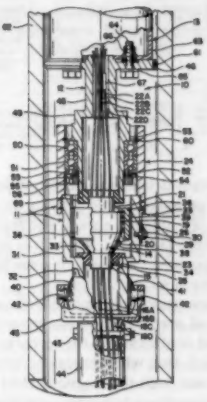
single control lever means located in said cockpit means and operably connected to said wing-mounted aileron means and to said tail-mounted control surface means for effecting pivotal movement, in the same direction, of said tail-mounted control surface means only while said wing-mounted aileron means remain stationary to achieve pitch motion of said aircraft upon movement of said control lever means axially of the aircraft and for effecting simultaneous pivotal movement, in one direction, of one of said wing-mounted aileron means and the tail-mounted control surface means on the same side of the fuselage and simultaneous pivotal movement, in the opposite direction, of the other of said wing-mounted aileron means and the other of said tail-mounted control surface means to achieve simultaneous yaw and roll motions of said aircraft upon movement of said control lever means transversely to the axis of the aircraft.

4,424,947

HELICOPTER DEICER SYSTEM POWER TRANSFER ASSEMBLY

Lowell J. Adams, Tallmadge, and David B. Sweet, Hartville, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,884
Int. Cl.³ B64D *15/12*
U.S. Cl. 244—134 D **14 Claims**



1. A device for isolation from vibrational and impulse loads a power transfer unit that transfers power from a source of power upon a fixed frame to a plurality of load elements on at least one rotating member, comprising:

distributor means rotating with the rotating member for distributing power from the power transfer unit to the plurality of load elements;

housing means flexibly supporting the power transfer unit and substantially isolating the power transfer unit from vibrational and impulse loads;

shaft means rotatably engaging said housing means for carrying said distributor means in rotation with the rotating member and,

a pipe rotatably extending from the fixed frame to contain and support said distributor means, housing means and shaft means.

4,424,948

MAGNETICALLY TORQUED NUTATION DAMPING

Ludwig Muhlfelder, Livingston; Kevin J. Phillips, Hightstown, both of N.J., and Steven L. Blasnik, Cambridge, Mass., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,343
Int. Cl.³ B64G *1/32, 1/38*
U.S. Cl. 244—166 **9 Claims**

1. An integral magnetic torquing system for a planet orbiting momentum stabilized satellite for minimizing nutation of said satellite while automatically and simultaneously controlling the roll and yaw attitude error of the satellite, whereby the momentum is essentially along the pitch axis and the pitch axis is oriented to a desired attitude, comprising:

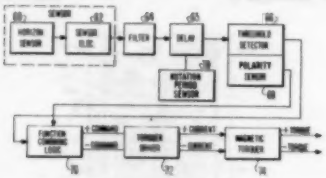
attitude error sensing means for generating a first output

signal representing the magnitude and the polarity of the deviation of the pitch axis from a desired attitude;

magnetic torquing means suitably oriented in the body of said satellite for producing a magnetic dipole;

control signal generating means coupled to said sensing means for generating a first control signal delayed a predetermined time period after said first output signal exceeds a predetermined attitude error threshold and for generating a second control signal delayed said predetermined time period after said first output signal diminishes below a predetermined attitude error threshold;

said control signal generating means including delay means for delaying the generation of said first and second control signals for said predetermined time period, said period being proportional to the nutation period of the satellite,



said delay means delays said period of time for a fraction of a nutation period or whole nutation cycle or cycles plus said fraction of a nutation period, said fraction being equal to D/360 where $D=\beta+\gamma$, where γ is equal to the skew angle of the magnetic dipole in degrees from the roll axis, and β is between 45 and 270; and

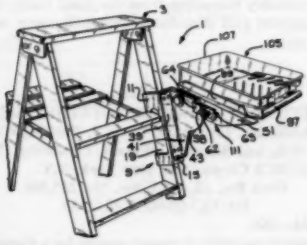
energizing means responsive to said first control signal for energizing said magnetic torquing means and responsive to said second control signal for de-energizing said torquing means such that when energized, the magnetic field therefrom reacts with the magnetic field of the planet to produce a torque for reducing any satellite nutation and to simultaneously reduce roll and yaw attitude errors, thereby correcting deviation of said pitch axis from said desired attitude.

4,424,949

PAINT TRAY SUPPORT

James P. Kimmett, 703 N. Pierce St., Delphos, Ohio 45833, and Leo Geise, Delphos, Ohio, assignors to James P. Kimmett, Delphos, Ohio

Filed Mar. 11, 1981, Ser. No. 242,593
Int. Cl.³ A47G *29/02*
U.S. Cl. 248—238 **12 Claims**



1. An adjustable support for a paint tray for use on a ladder comprising:

a bracket for attaching to one of the legs of said ladder, said bracket containing a generally U-shaped member that fits over said leg of said ladder, a flange that is connected to said U-shaped member and a section for engaging one of said steps or rungs on said ladder;

a support member for said paint tray, said support member pivotally connected to said flange of said bracket, said support member having a raised portion at each end for engaging said paint tray;

means for pivotally securing said support member to said bracket, said means for securing being positioned on said flange; and

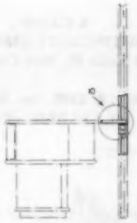
a clamp positioned to engage a portion of said support member to releasably secure said support member with respect to said bracket.

4,424,950

EDGE MEMBER FOR MIRROR ASSEMBLIES

Hidetoshi Yoshiyuki, Bridgewater, N.J., assignor to Takara Company, Somerset, N.J.

Filed Mar. 23, 1981, Ser. No. 246,856
Int. Cl.³ A47F *7/14*
U.S. Cl. 248—475 R **5 Claims**



1. An extrusion piece for supporting a panel, comprising:

a pair of shaped members each having;

a first portion having a curved part; and

a second portion, said second portion comprising a longer and shorter leg channel, said legs being disposed away from said first portion and having said longer leg joined to one edge of a first inner straight part, and said shorter leg joined to one edge of a second inner straight part, said straight parts being disposed in opposite directions and being parallel to each other, said curved parts being disposed in opposite directions, and each of said second portions being disposed in facing opposition; and

a web, said web being disposed between said second portions, whereby one side of said web and said second portions form a pocket for receiving said panel, and the other side of said web and said second portions form a pocket for receiving a mounting bracket for supporting said panel in said extrusion piece, said web being of constant width and being joined with said longer leg of said channel which is part of said pair of second portions; and

said first portion comprising a "Z"-angled part having one edge joined to the other edge of said first inner straight part, said "Z" angled part having its other edge joined to said curved part.

4,424,951

BUILDING FORM AND METHOD OF ASSEMBLY

Robert B. Spencer, Strongsville, Ohio, assignor to National Engineering & Contracting Company, Strongsville, Ohio

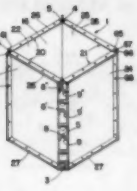
Continuation-in-part of Ser. No. 197,085, Oct. 15, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 286,365
Int. Cl.³ E04G *13/02*
U.S. Cl. 249—48 **25 Claims**

1. A form for making concrete structures, comprising:

(a) a first side member defining at least one side of the form and a second side member defining at least another side of

the form, the first and second members when connected to each other defining a concrete-receiving volume; and

(b) a joint connecting the first and second side members to each other along an edge, the joint having a vertically movable member operably connected to the first and second side members such that movement of the vertically



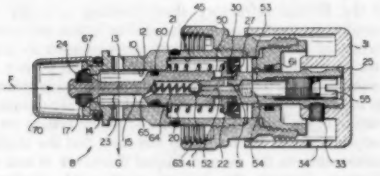
movable member to a first position causes the first and second side members to move relative to the concrete-receiving volume to an open position and movement of the vertically movable member to a second position causes the first and second side members to move relative to the concrete-receiving volume to a closed position.

4,424,952

METERING UNIT

David Thomson, and Benjamin Korec, both of Cambridge, Canada, assignors to Waltec Inc., Cambridge, Canada

Filed Sep. 27, 1982, Ser. No. 423,760
Claims priority, application Canada, Mar. 31, 1982, 400800
Int. Cl.³ F16K *31/48, 47/10*
U.S. Cl. 251—54 **8 Claims**



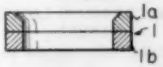
1. A metering valve unit comprising a sleeve member having an axially extending bore and at least one transverse bore communicating with said axially extending bore, said axially extending bore having one end adapted to be connected to a water supply conduit and said transverse bore being adapted to be connected to an outlet conduit, a valve stem being retained in said axially extending bore for slidable movement between an open position and a closed position in which a resilient seat washer seals said one end of the axially extending bore, spring means biasing said stem toward the closed position, means for manually moving the stem to the open position and regulating means for regulating movement of said stem from the open position to the closed position, said regulating means comprising an annular cup washer secured to said stem and disposed within an annular liquid-filled chamber formed between said stem and sleeve, said chamber being divided into first and second portions by said cup washer and said first and second chamber portions being interconnected by passageways within said stem, one of said passageways containing a compressible wad of porous material, whereby movement of said valve toward the open position causes said cup washer to collapse to allow liquid to move from the first portion of the chamber to the second portion whereas movement of the valve toward the closed position causes said cup washer to seal said second portion of the chamber from the first portion of the chamber and force liquid to flow from the second portion of the chamber through said passageways and said compressible wad, flow through said compressible wad regulating closing time of the valve, including adjustable means for compressing said compressible wad to thereby adjust the rate of closing of said valve and wherein said passageways communicate with a check valve which, when open, connects said passageways to said outlet whereby, if the valve expands when subjected to hot water, some liquid may escape from said chamber via said passageways and check valve to prevent seizing of the valve.

4,424,953

DUAL-LAYER SINTERED VALVE SEAT RING

Yoshiaki Takagi, Tsurugashimamachi; Takeshi Sugawara, Oimachi; Setsuo Nii, Chino, and Takayuki Matsuda, Okaya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Teikoku Piston Ring Co., Ltd., both of Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,717
Claims priority, application Japan, Mar. 9, 1982, 57-35744
Int. Cl.³ F01L *3/02*
U.S. Cl. 251—368 **10 Claims**



1. A valve seat ring having a high strength and high stiffness and comprising a valve seat body having a surface in contact with a valve, and a base for supporting said valve seat body, said valve seat body and said base consisting of a ferrous sintered article having a dual-layer structure (hereinafter referred to as the dual-layer sintered body), wherein: said valve seat body comprises from 5% to 30% by weight of hard alloy particles having a hardness of Hv 500 or more and a matrix in which said hard alloy particles are dispersed and an alloying element of said hard alloy particles diffuses around said hard alloy particles and into said matrix; a ferrous sintered body of said base contains from 0.5% to 1.5% by weight of carbon, from 0.6% to 3.0% by weight of chromium, and at least one element selected from the group of phosphorus in an amount of from 0.1% to 0.6% by weight and boron in an amount of from 0.02% to 0.2%, based on the weight of said ferrous sintered body; and said dual-layer sintered body has a density of 7.6 g/cm^3 or more and comprises a skeleton, pores formed by sintering (hereinafter referred to as sintered pores), and copper or a copper alloy which is fusion-infiltrated into the first portions of said sintered pores, said skeleton having a density of from 6.7 g/cm^3 to 7.1 g/cm^3, the percentage of said sintered pores and the percentage of the second portions of said sintered pores, in which said copper or copper alloy is not fusion-infiltrated being 15% or less and 5% or less, respectively, based on the volume of said dual-layer sintered body.

4,424,954

FIBER OPTIC CABLE TENSION LOADER

John L. Innes, Topeka, Kans., assignor to Communications Systems, Inc., Hector, Minn.

Filed Mar. 18, 1982, Ser. No. 359,365
Int. Cl.³ E21C *29/16*
U.S. Cl. 254—134.3 CL **10 Claims**

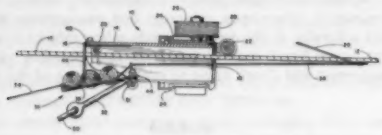
1. In a cable lashing machine which is movable along a supporting strand for securing a fiber optic cable to the supporting strand having:

an elongated housing having forward and rearward ends and having a central through bore extending longitudinally thereof for reception of a fiber optic cable and the supporting strand; and

a spinning head mounted on the elongated housing adjacent the rearward end of the elongated housing having means for tensionally paying out a lashing line so that the line

wraps helically around the fiber optic cable and supporting strand as the elongated housing is advanced along the supporting strand;

the improvement which comprises:



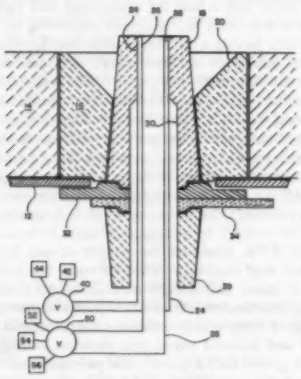
means for loading the fiber optic cable in tension as it passes through the elongated housing central bore and is lashed to the supporting strand sufficiently to maintain the fiber optic cable coextensive relative to the supporting strand as the lashing line is wrapped around the cable and supporting strand.

4,424,955

APPARATUS FOR TREATING LIQUID METAL IN A VESSEL

William Wells, Charlotte, N.C., assignor to Korf Technologies, Inc., Charlotte, N.C.

Filed Oct. 5, 1981, Ser. No. 308,701
Int. Cl.³ C21C 5/42
U.S. Cl. 266—44 **7 Claims**



1. Apparatus for injecting a treating gas into a vessel through its bottom wall, said vessel having a refractory lining with a bottom-pour opening therein, said apparatus comprising:

a refractory nozzle block mortared into said refractory lining and having a central opening aligned with the axis of pour;

a refractory tuyere block positioned in the central opening in said nozzle block and extending into said vessel at least to the limit of the refractory lining;

dual concentric pipes fixed within said tuyere block and terminating at the end of said tuyere block within the furnace, said pipes having an annular passageway therebetween and extending beyond the outer steel shell of the furnace and being connected to respective sources of treating material; and

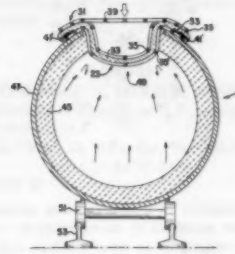
a slidable gate closure member fastened external to said vessel and having a refractory closure member with a pouring opening being aligned with the external portion of said dual concentric pipes to allow said pipes to project therethrough.

4,424,956

DRAPABLE, CONSUMABLE, HEAT RETENTION SHIELD FOR HOT METAL CARS

Louis A. Grant, Pittsburgh, and Arthur F. Trunzo, White Oak, both of Pa., assignors to Standard Steel Sponge, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 342,517, Jan. 25, 1982. This application Apr. 14, 1982, Ser. No. 368,277
Int. Cl.³ F27D 3/00
U.S. Cl. 266—248 **8 Claims**



1. A lightweight and manually positionable drapable, consumable, heat retention shield for conserving the heat of the interior lining of a hot metal car into which hot metal is to be poured, with an aperture therein for pouring molten metal therein and discharging molten metal therefrom, comprising:

a drapable panel comprised of a fibrous refractory sheet disposed between first and second metallic lattices, with fastening means connecting the lattices together to retain the fibrous refractory sheet therebetween, the panel having a bottom wall portion, upstanding walls about the bottom wall portion, and a flange extending outwardly from the upstanding walls, the first lattice and first surface of the fibrous refractory sheet forming a cavity surrounded by the flange, and the second lattice and second surface of the fibrous refractory sheet adapted for exposure to the hot temperatures of the hot metal car, the bottom wall portion and upstanding wall portion arranged for insertion into the aperture of the hot metal car with the portion of the second lattice on the flange resting on the body portion of the hot metal car such that the shield is positionable on the car and draped thereover to seal said aperture, without the use of mechanical attachment means, and the shield, upon pouring of the hot metal into the car is forced through the aperture and consumed.

4,424,957

HOT METAL CAR HEAT RETENTION SHIELD

Louis A. Grant, Pittsburgh, and Arthur F. Trunzo, White Oak, both of Pa., assignors to Standard Steel Sponge, Inc., Pittsburgh, Pa.

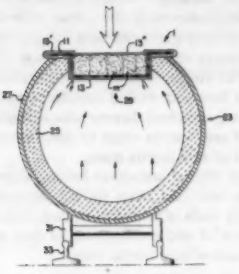
Filed Jan. 25, 1982, Ser. No. 342,517
Int. Cl.³ F27D 3/00
U.S. Cl. 266—248 **8 Claims**

1. A lightweight and manually positionable consumable heat retention shield for conserving the heat of the interior lining of a hot metal car into which hot metal is to be poured, the car having a body portion, with an aperture therein for pouring molten metal therein and discharging molten metal therefrom, comprising:

(a) a supporting framework of combustible material having a bottom wall portion, upstanding walls about the bottom portion and a flange extending outwardly from the upstanding walls; the bottom wall portion, upstanding walls and flange having a first surface which is adapted for exposure to the hot temperatures of the hot metal car, and a second surface which forms a cavity; and

(b) a layer of refractory material covering at least the first

surfaces of the bottom wall portion, upstanding walls and flange, the bottom wall portion and upstanding walls arranged for insertion into the aperture of the hot metal car with the flange resting on the body portion thereof,



such that the shield is positionable on the car to seal said aperture, without the use of mechanical attachment means, and the shield, upon pouring of hot metal into the car, is forced through the aperture and consumed.

4,424,958

LINEAR SLIDING CLOSURE UNIT

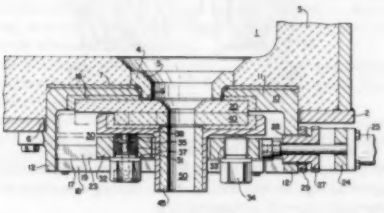
Herbert Bachmann, Ebikon, Switzerland, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Apr. 23, 1982, Ser. No. 371,486

Claims priority, application Switzerland, May 19, 1981, 3255/81

Int. Cl.³ B22D *37/00*

U.S. Cl. 266—271 **11 Claims**



1. In a linear sliding closure unit for use in discharging molten metal from a container and of the type including a stationary refractory plate, a closure casing adapted to be mounted on the molten metal container, a linearly movable sliding refractory plate, a sliding closure member mounting said sliding refractory plate for linear sliding movement relative to said casing and said stationary refractory plate, and means for urging said sliding refractory plate toward said stationary refractory so that respective sliding surfaces thereof are in abutment, the improvement wherein:

said closure casing includes an inner supporting surface supporting and defining the position of said stationary refractory plate;

means on said closure casing defining guide surfaces at positions outwardly of said supporting surface;

said sliding closure member includes a sliding carriage adapted to be moved linearly and guided by said guide surfaces during linear sliding movement;

said sliding refractory plate is supported to be movable by said sliding carriage in the direction of sliding movement but is separate from said sliding carriage and movable with respect thereto in a direction transverse to said sliding surfaces and to said direction of sliding movement;

said urging means are mounted on said sliding closure member for sliding movement therewith and urge said sliding refractory plate away from said sliding carriage and toward said stationary refractory plate;

said closure casing including fixed structure rigidly connecting and spacing said guide surfaces a predetermined fixed distance from said supporting surface; and

said sliding closure member being exposed to the exterior through an open outer portion of said closure casing, and said urging means comprise plural members insertable into and removable from said sliding closure member through said open outer portion.

4,424,959

BRICKWORK CONSTRUCTION

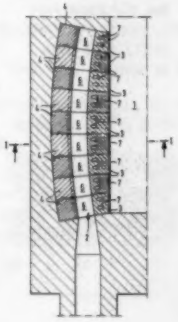
Frans H. Tuovinen, Ulvila; Pentti O. Hokkanen, Tornio; Aimo A. Nurminen, Tornio; Lauri A. Mustikka, Tornio, and Matti A. Virta, Tornio, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 314,769, Oct. 26, 1981, abandoned. This application Jun. 18, 1982, Ser. No. 344,594

Claims priority, application Finland, Oct. 27, 1980, 803353

Int. Cl.³ F27B *1/14*

U.S. Cl. 266—283 **4 Claims**



1. A brickwork construction for use when making a gas distribution chamber for a shaft kiln of the type having internal wall surfaces which are essentially straight in both the horizontal and vertical directions comprising: wedge-shaped bricks surrounding the combustion gas distribution chamber, the bricks being laid so that narrow ends of the bricks are towards the shaft kiln forming a generally planar internal wall of the shaft kiln, the bricks forming an arched construction.

4,424,960

RUBBER VIBRATION ISOLATORS

Takuya Dan, and Akio Fujita, both of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,568

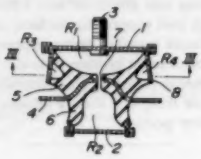
Claims priority, application Japan, Jun. 23, 1980, 55-84773; Jul. 12, 1980, 55-94565

Int. Cl.³ F16F *9/10*

U.S. Cl. 267—8 R **5 Claims**

1. A rubber vibration isolator comprising; a pair of upper and lower liquid chambers capable of changing volumes of elastic deformation of an annular rubber elastomer accompanied with longitudinal vibration, and a first restricted passage for establishing communication between said chambers, a circumferential sleeve at the outer periphery of said rubber elastomer, at least two liquid spaces capable of changing volumes accompanied with lateral vibration formed in the circumferential direction between said rubber elastomer and said

circumferential sleeve, said liquid spaces formed in the circumferential direction between said rubber elastomer and said



circumferential sleeve in fluid communication with each other through a second restricted passage.

4,424,961

ENGINE MOUNTING FOR SUSPENDING ENGINE RELATIVE TO VEHICLE STRUCTURE

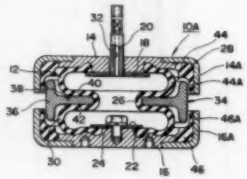
Hirofumi Takei, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 7, 1981, Ser. No. 261,374

Claims priority, application Japan, May 9, 1980, 55-61383; May 15, 1980, 55-64318; May 15, 1980, 55-64319

Int. Cl.³ F16F 9/04

U.S. Cl. 267—64.27 **4 Claims**



1. In a vehicle,

an engine;

a vehicle structure;

a first armature connected to the engine for movement therewith;

a second armature connected to said vehicle structure for movement therewith;

an elastic bellows having one end securely connected to said first armature and an opposite end securely connected to said second armature and defining therewith a closed chamber;

said elastic bellows having a waist portion, a first hinge portion radially extending from said one end thereof and said waist portion, and a second hinge portion radially extending from said opposite end thereof and said waist portion thereof;

an inertia mass mounted on and around said waist portion of said bellows for movement therewith, said inertia mass having a ring section and a radially inwardly extending section fitted and received in said waist portion of said bellows;

a gas contained in said closed enclosure under pressure;

a mass of said inertia mass and an apparent spring constant of said elastic bellows being selected such that said inertia mass vibrates in the same phase as the phase of vibration of said first armature when the engine operates at speeds below a predetermined revolution speed, whereas said inertia mass vibrates in inverse phase relationship with the phase of vibration of said first armature when the engine operates at speeds above said predetermined revolution speed;

said second armature having an area wider than a cross-sectional area of said second hinge portion radially extending from said opposite end and said waist portion thereof to provide an arrangement whereby when said inertia mass vibrates in inverse phase relationship with the phase of vibration of said first armature, an effective pressure acting area through which said elastic bellows contacts with said second armature varies alternately and in inverse phase relationship with the phase of a variation in the pressure of said gas contained in said closed enclosure which pressure varies in the same phase relationship with the phase of vibration of said first armature;

each of said first and second armatures having an annular resilient stop attached thereto which abuts with said ring section of said inertia mass to limit excessive axial displacement of said inertia mass;

said first and second armatures having sleeve portions, respectively, and said stops having portions extending to cover inner walls of said sleeves, respectively, to abut said ring section of said inertia mass to limit excessive radial displacement of said inertia mass.

4,424,962

SPHERICAL SPRING MOUNTING

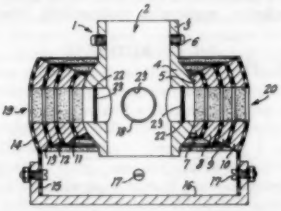
Malcolm Johnston, 46 Ladbroke Square, London W11, 3ND, England

Filed Nov. 9, 1981, Ser. No. 319,851

Claims priority, application United Kingdom, Oct. 24, 1980, 8034357

Int. Cl.³ F16F 1/38

U.S. Cl. 267—140.2 **7 Claims**



1. A spherical spring mounting comprising:

a hub having mounting means for a member to be mounted to extend along the hub axis, the hub having a portion of part-spherical external surface,

an array of layers of elastomer surrounding the spherical hub portions, each elastomer layer having the form of a hollow truncated sphere,

the elastomer layers being separated by hollow truncated spherical shells of rigid material,

a casing having a truncated spherical inner surface surrounding the outermost elastomer layer,

the elastomer layer and shells being bonded together and to the hub and casing,

more than two bores each extending radially through the casing, the bonded layers and shells, and into the spherical hub portion,

the bores being arranged symmetrically about the axis,

a group of connecting members of different lengths, there being a number of members of the same length equal to the number of bores and a number of different lengths equal to the number of elastomer layers,

the connecting members being each adapted for insertion into a bore to connect the hub to a selected shell corresponding to the length of the connecting member whereby with all the bores filled to one selected shell a selected degree of resilience can be imparted to a mounted member when pivoted in any direction normal to the axis,

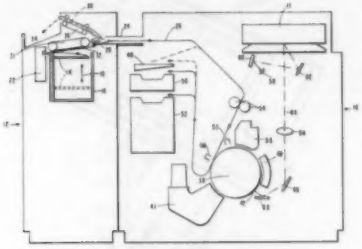
each connecting member being provided with means for engagement with the hub and means to allow its withdrawal.

4,424,963

FINISHER—EXIT POCKET MODULE FOR COPIER

Michael A. Bartholet, Boulder; James L. Cochran, Longmont; Donovan M. Janssen, Boulder, all of Colo.; Robert Magno, Tucson, Ariz.; Allan J. Rood, Longmont, Colo.; William S. Seaward, Boulder, Colo., and Lance A. Walker, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1981, Ser. No. 301,335
Int. Cl.³ B42B 2/00
U.S. Cl. 270—53 9 Claims



1. In an apparatus for receiving, finishing, and stacking document sheets in finished sets, the combination comprising:

accumulator means for accumulating successively received sheets into sets for finishing;

transport belts having negative pressure supplied thereto to hold said sheets on the belt for receiving individual sheets in succession and for inserting from a given direction said individual sheets into said accumulator means;

push-down arms pivotally mounted at one end and disposed adjacent and parallel to said transport belts for disengaging said sheet from said transport belts onto said accumulator means when actuated;

stacker means disposed adjacent said accumulator means for supporting accumulated sheets and for stacking finished sheets; and

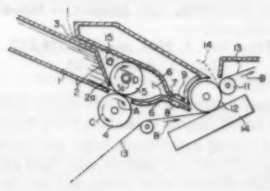
ejector means for moving finished sets from said accumulator means onto said stacker means in a direction opposite from said given direction.

4,424,964

PAPER TRANSPORTATION CONTROL SYSTEM

Yoshiki Kikuchi, and Tomio Murayama, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,022
Claims priority, application Japan, Dec. 4, 1980, 55-170291
Int. Cl.³ B65H 5/26, 7/14
U.S. Cl. 271—91 1 Claim



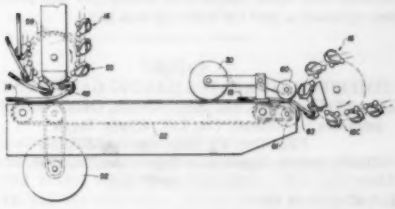
1. A paper transportation control system for a recording apparatus comprising first passage means for receiving paper from a paper tray, second passage means substantially parallel to said first passage means for receiving manually supplied paper, a retard roll rotatably mounted intermediate said first and second passages in contact with said second passage means, one-way clutch means permitting rotation of said retard roll in a direction to feed a manually supplied sheet of paper between said retard roll and said second passage means, a feed roll located on the opposite side of said first passage means from said retard roll in contact with said retard roll, driving means for rotating said feed roll in opposite directions whereby upon operation of said feed roll in one direction, said retard roll will be rotated to feed a manually supplied sheet of paper and on rotation of said feed roll in the opposite direction, a sheet of paper will be fed from a paper tray between said feed roll and said retard roll, with said retard roll being maintained stationary and sensing means locating in said second passage means in advance of said retard roll for sensing a sheet of manually supplied paper and providing a control signal to said driving means to rotate said feed roll and said retard roll to feed said manually supplied sheet of paper.

4,424,965

HIGH SPEED TRANSPORT SYSTEM FOR NEWSPAPERS AND THE LIKE

Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.

Filed Jun. 4, 1981, Ser. No. 271,032
Int. Cl.³ B65H 29/66
U.S. Cl. 271—202 7 Claims



1. Simplified asynchronous to synchronous conversion apparatus for conveying paper sheet products with precision timing and spacing comprising in combination,

means for passing a set of interconnected paper sheet product receiving selectively operable spaced gripping clamps each with a single pivoted spring biased grasping jaw cammable between open jaw and closed jaw positions for carrying products along a transit path between processing stations defined by a conveyance track,

means including a plurality of stations located along the conveyance track for selectively opening and closing the clamp jaws as they pass the respective stations thereby to receive and discharge said products at said stations at a position substantially centered between the edges of the product leading edge,

means for feeding the in sequence leading edge of moving paper sheet products individually into a registration stop position defined by adjacent opened clamps at a loading station to move in the direction of clamp movement along the track at a speed greater than the speed of the clamps along said path, and

means for removing the products in precisely timed sequence from said clamps at a discharge station along the transit path by opening the clamp jaws carrying the paper sheet products.

4,424,966

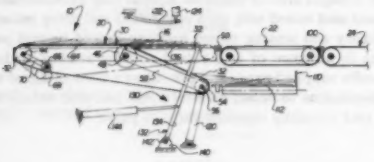
MECHANISM FOR CONVEYING ARTICLES SELECTIVELY INTO DIFFERENT PATHS

Mohanjit S. Chandhoke, Plattsburgh, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Sep. 3, 1981, Ser. No. 298,933

Int. Cl.³ B65H *29/60*; B65G *37/00*

U.S. Cl. 271—302 **7 Claims**



1. An apparatus for conveying a shingled stream of articles, said apparatus comprising an infeed conveyor having a fixed portion and a pivotal portion, means for shifting said pivotal portion between a first position in which the stream of articles travels along a first path and a second position in which the stream of articles travels along a second path, means for clearing articles off said pivotal portion of said infeed conveyor and for supporting articles for movement along said first path prior to return of said pivotal portion from said second position to said first position, and an outfeed conveyor, said pivotal portion of said infeed conveyor being aligned with said outfeed conveyor when in said first position and said pivotal portion being spaced from said outfeed conveyor when said pivotal portion is in said second position thereby creating a gap between said fixed portion of said infeed conveyor and said outfeed conveyor when said pivotal portion is in said second position, said means for clearing articles off said pivotal portion including a part for spanning said gap.

4,424,967

TIMEPIECE APPARATUS HAVING GAME FUNCTION

Gunpei Yokoi, Kyoto, and Satoru Okada, Osaka, both of Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

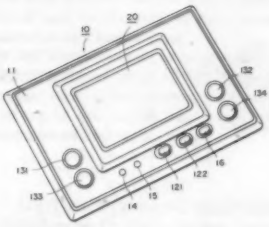
Filed Dec. 10, 1981, Ser. No. 329,383

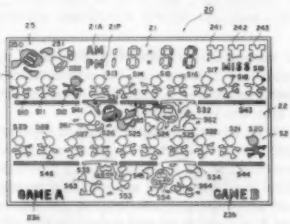
Claims priority, application Japan, Dec. 26, 1980, 55-186658

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—1 GC **14 Claims**

1. A timepiece apparatus having a game function comprising: game associated information generating means for generating game associated information for use in playing a game, current time information generating means for generating current time information, display means including game associated information display means for displaying at least a figure and for displaying said game associated information from said game associated information generating means, and numerical value information display means for displaying a numerical value and for displaying at least said current time information from said current time information generating means, mode selecting means for selecting the display mode to be performed by said display means to be either one of a game mode for displaying said game associated information and a timepiece mode for displaying said current time information, display control means for controlling said game associated information display means to display said game associated information from said game associated information generating means when said game mode is selected by said mode selecting means and for controlling said numerical information display means to display said current time information from said current time information generating means when said timepiece mode is selected by said mode selecting means, time setting means for setting a desired alarming time when an alarm is to be caused, storing means for storing said desired alarming time as set by said time setting means, alarm means for causing an alarm, alarm driving means for driving said alarm means responsive to said current time information from said current time information generating means reaching said desired alarming time stored in said storing means, said alarm means comprising audible alarm means for causing an audible alarm and visible alarm means for causing a visible alarm, said alarm driving means comprising audible alarm signal generating means for generating an audible alarm signal for driving said audible alarm means, visible alarm signal generating means for generating a visible alarm signal for driving said visible alarm means,





said alarm driving means comprising means for disabling said audible alarm signal generating means when said game mode is selected by said mode selecting means, and for enabling at least one of said audible alarm signal generating means and said visible alarm signal generating means when said timepiece mode is selected by said mode selecting means, and wherein said visible alarm causing means form part of said display means.

4,424,968

BASKETBALL BACKBOARD APPARATUS

Max D. Smith, Evansville, Ind., assignor to Indian Industries, Inc., Evansville, Ind.

Filed Nov. 5, 1981, Ser. No. 318,487

Int. Cl.³ A63B *63/08*

U.S. Cl. 273—1.5 R **5 Claims**

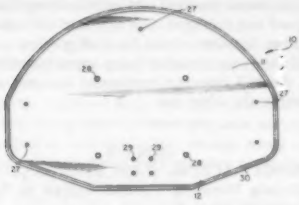
1. A basketball backboard apparatus which comprises:

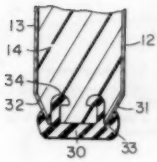
a sandwich board shaped in the form of a basketball backboard and having a perimetric edge, said sandwich board including front and rear spaced-apart rigid panels, and an intermediate resilient layer positioned between the front and rear panels, said front and rear panels including edges extending outwardly of the intermediate layer;

securement means for securing together the front and rear panels and the intermediate layer of said sandwich board in an adjacent, sandwich relationship;

a border attached to the perimetric edge of said sandwich board, said border being substantially softer than the front and rear panels and including a pair of recesses within

which the edges of the front and rear panels are received; and





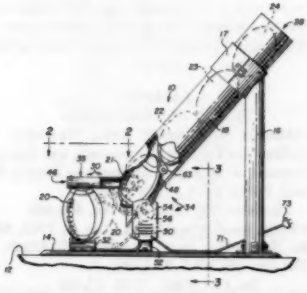
mounting means for mounting said sandwich board to an external backboard support.

4,424,969

AUTOMATIC APPARATUS FOR POSITIONING FOOTBALLS FOR KICKING

Samuel R. Dumas, 215 Oakhurst St., El Dorado, Ark. 71730

Filed Jun. 15, 1981, Ser. No. 273,344
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—55 B **4 Claims**



1. Football positioning apparatus for place kicking practice, the apparatus comprising:

base means adapted to be disposed upon a supportive surface;

inclined hopper means for containing a plurality of footballs, said hopper means secured to said base means to serially, gavity feed footballs;

set up means for receiving footballs from said hopper means and for automatically positioning footballs extracted from said hopper means in a generally vertical end-to-end orientation for subsequent kicking, said set-up means comprising:

extraction means for extracting footballs one at a time from said hopper means, said extraction means comprising:

wheel means rotably mounted above said base means;

elongated, resilient finger means projecting generally radially outwardly from said wheel means and adapted to be periodically rotated by said wheel means into engagement with a football to be set up for subsequent kicking; and,

means for actuating said wheel means; and,

guide arm means for orienting footballs outputted from said hopper means in said generally vertical end-to-end orientation relative to said base means in cooperation with said extraction means; and,

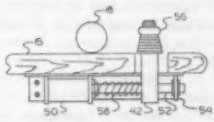
switch means responsive to football contact for interrupting said means for actuating said wheel means, and operable when a football is kicked to operate said means for actuating said wheel means thereby automatically positioning a football.

4,424,970

PANIC POST FOR PINBALL GAMES

Ronald D. Halliburton, Delray Beach; James H. Pearson, Oakland Park, both of Fla., and Robert J. Sava, San Jose, Calif., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Feb. 16, 1982, Ser. No. 349,298
Int. Cl.³ A63F *7/02, 7/26*
U.S. Cl. 273—121 A **8 Claims**



1. Apparatus for playing pinball comprising:

an inclined playfield upon which a ball rolls during play, said playfield having a plurality of contact points cooperable with means for effecting a game score in response to contacts between said ball and said contact points;

means for propelling the ball onto the playfield;

means for scoring;

at least one out-hole;

at least one passage through which the ball may pass during play of the game, the passage having an entrance and leading to a section of the playfield in which the ball cannot change the score before the ball enters the out-hole; and

a play feature comprising an upstanding bumper post, means supporting said bumper post for rectilinear movement in a direction substantially parallel to the playfield between a first position enabling movement of the ball through said passage and a second position substantially blocking the entrance to the passage so as to hinder the ball from moving through the passage, and actuator means enabling selective movement of said bumper post between said first and second positions.

4,424,971

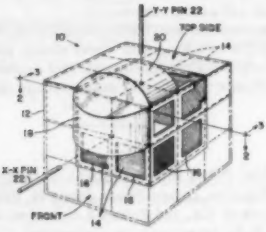
CUEE PUZZLE

William H. Clark, 7731 West Lake Dr., Lake Clarke Shores, Fla. 33406

Filed Apr. 7, 1982, Ser. No. 366,363
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **35 Claims**

1. A cube puzzle manipulative by a player, said cube puzzle comprising: a box structure of parallelepipedon form and hav-

ing a hollow rectangular interior housing in slidable relationship a predetermined number of uniformly sized cubes in at least one tier, the number of cubes being at least one less than the housing capacity of said rectangular interior, said box structure having at least one hollow arched alcove extending outward from at least one side of said rectangular interior, each of said alcoves being in internal register with and spanning the space occupyable by two of said cubes abutting in face-to-face



relationship contiguous with an edge of said rectangular interior, each of said alcoves having an interior width slightly greater than the width of a cube, and with the internal radius of curvature of the arched end on each of said alcoves being slightly greater than the diagonal dimension of a face on one of said cubes, each of said alcoves forming a tumble chamber for tumbling a selected cube from one face to an adjacent face thereon at the option and control of said player.

4,424,972

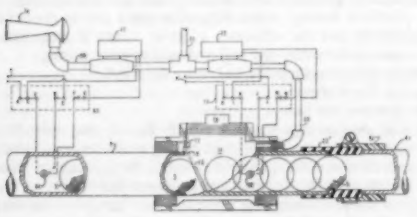
GAME APPARATUS

Richard H. Vinette, P.O. Box 191, Lanesboro, Mass. 02137

Continuation-in-part of Ser. No. 156,443, Jun. 4, 1980, Pat. No. 4,272,078, which is a continuation-in-part of Ser. No. 31,902, Apr. 20, 1979, abandoned. This application Mar. 24, 1981, Ser. No. 246,978

Int. Cl.³ A63B 65/12

U.S. Cl. 273—397 **10 Claims**



1. A game apparatus for projecting balls through space towards a target comprising:

a ball ejection unit having a pressurizable ball receiving chamber with a ball entrance opening therein,

a door for closing said opening,

an exit located in said ball receiving chamber through which said ball is able to pass when the chamber is under pressure,

a source of fluid under pressure,

means for admitting the fluid under pressure into said chamber in an amount sufficient to drive the ball from the chamber,

an exit conduit that the ball passes through after the ball has been driven from the chamber,

a control means for operating said fluid admitting means,

said control means designed and arranged to be operated by a hand of a person playing said apparatus while the person is in the process of playing said game,

a ball entrance pipe leading into said ball entrance opening,

said ball entrance pipe and said ball receiving chamber being designed and arranged such that said ball enters said ball receiving chamber by the force of gravity,

said ball receiving chamber being approximately horizontal with the ball entrance opening at one end and the exit located at the other end.

4,424,973

SINGLE-ACTING SLIDE RING SEALING

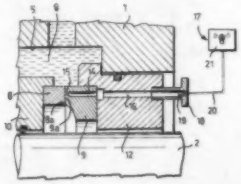
Antti J. Heilala, Muurame, Finland, assignor to Oy Safematic Ltd., Muurame, Finland

Filed Feb. 1, 1983, Ser. No. 462,976

Claims priority, application Finland, Feb. 9, 1982, 820409

Int. Cl.³ F16J 15/34

U.S. Cl. 277—2 **6 Claims**



1. A single-acting slide ring sealing comprising

a counter ring (**8**) to be fastened to a rotating machine part (**2**) and having a first annular sliding surface (**8***a*), and

a non-rotating sealing ring (**9**) to be supported on a stationary machine part (**1**) and having a second annular sliding surface (**9***a*) which, in operation, is pressed against the sliding surface of said counter ring, characterized in

that the sliding surface (**9***a*) of the sealing ring (**9**) is provided with at least one part (**15**) weaker than the rest of the sliding surface, and

that the sealing ring (**9**) is provided with a closed channel (**14**) which is separated by said weaker part (**15**) from the sliding surface (**9***a*) and which communicates with a leak indicator (**17**;**27**;**37**) acting by means of the liquid to be sealed.

4,424,974

FERRO FLUIDIC SEAL

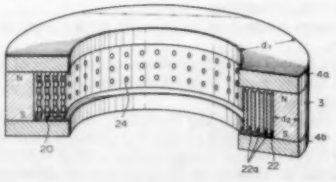
Yasunaga Mitsuya, Sekimachi; Kunio Hoshiya, Higashi-Yamato; Shigemitsu Oguchi, Tokorozawa, and Reizo Kaneko, Higashi-Yamato, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,598

Claims priority, application Japan, Aug. 8, 1981, 56-124613; Aug. 8, 1981, 56-124614; Nov. 24, 1981, 56-188068; Jan. 19, 1982, 57-6378; Jan. 19, 1982, 57-6380

Int. Cl.³ F16J 15/16, 15/40

U.S. Cl. 277—80 **20 Claims**



1. A ferro fluidic seal comprising:

a seal assembly comprising a substantially cylindrical permanent magnet magnetized in the axial direction of the same,

a pair of ring shaped yokes made of ferro-magnetic material coupled coaxially with said permanent magnet, and a fresh fluid storage containing fluid with ferro magnetic property mounted in a room defined by said magnet and the yokes,

a rotational body rotational relative to said seal assembly, said rotational body being arranged coaxially with said seal assembly so that thin clearance gaps are provided between the rotational body and the yokes, and said rotational body being made of ferro-magnetic material,

fluid contained in said fresh fluid storage being communicated with said clearance gaps between the yokes and the rotational body to seal said gaps,

said fresh fluid storage comprising a resilient elongated member adapted in a circular shape along the surface of said cylindrical permanent magnet, and

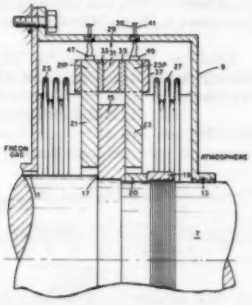
said member being fixed on the surface of the permanent magnet with a spring action by said member itself.

4,424,975

ROTARY SHAFT SEAL

Clair O. Langebrake, Waverly, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 25, 1983, Ser. No. 488,300
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—81 R **18 Claims**



1. A shaft seal for use in a gas atmosphere, comprising:

a sealing gland comprising an annular disc and an annular plate in face-to-face sealing relation, said disc being mounted on and rotatable with a shaft, said plate being movable along the axis of said shaft and carrying an array of transducer assemblies disposed about said axis, each transducer assembly including a transducer element constructed of a material selected from the group consisting of electrostrictive and magnetostrictive materials, said transducer element being responsive to electrical excitation by vibrating in the direction of said axis and being mounted to impart its vibration to said plate, and

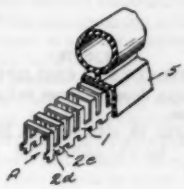
means for electrically exciting the transducer elements to effect axial vibration of said plate and generation of an interfacial layer of compressed ambient gas between said plate and disc.

4,424,976

CHANNEL-SHAPED TRIM WITH DISCONNECTED CORE PIECES

Keizo Hayashi, Nagoya, Japan, assignor to Toyoda Gosei Co., Ltd., Nagoya, Japan

Division of Ser. No. 53,551, Jun. 29, 1982, Pat. No. 4,339,860. This application May 10, 1982, Ser. No. 376,505
Claims priority, application Japan, Jun. 30, 1978, 53-91206
Int. Cl.³ B60R *13/02*; F16J *15/12*
U.S. Cl. 277—205 **1 Claim**



1. A channel-shaped trim having a longitudinally extending opening for embracing and clamping an edge flange of a support member comprising:

a core member comprised of a large number of disconnected channel-shaped core pieces which are transversely extending and longitudinally disposed in series at predetermined intervals;

each of said core pieces comprising at least two spaced apart channel-shaped strip-shaped elements and narrow connecting portions connecting said at least two strip-shaped elements together, said connecting portions being positioned symmetrically with respect to both side end portions of said elements so as to define and surround at least one slot between said elements and said connecting portions; and

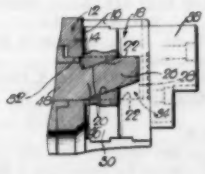
a covering member extending completely around said core member and extending through said slot and spaces formed between said disconnected channel-shaped core pieces.

4,424,977

WEDGE CHUCK

Samuel H. Pruden, East Hartford, and James B. Kunz, New Haven, both of Conn., assignors to Cushman Industries, Incorporated, Hartford, Conn.

Filed Mar. 26, 1982, Ser. No. 362,511
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—121 **8 Claims**



1. A chuck having jaws, a body with a rotary axis having a front wallwith ways therein associated with said jaws and guiding them for movement radially of, and in a common plane normal to, said axis, with each way having a median plane in which said axis lies, and each way and jaw therein having opposite sidewalls lying in planes parallel to and equally spaced from said median plane of the way, of which said sidewalls of each jaw have therein laterally aligned first grooves of the same width and extending lengthwise to form a given angle

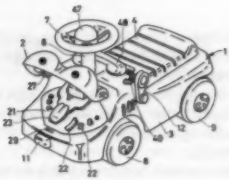
with said common plane, and said sidewalls of each way have therein laterally aligned second grooves of uniform width and with opposite sides lying in parallel planes normal to said common plane and to said median plane of the associated way, and a jaw actuator guided in said body for movement in the direction of said axis and having a set of keys associated with each jaw, of which the keys of each set are received with a sliding fit in said first grooves in the associated jaw and with a sliding fit in said second grooves in the associated way, respectively, whereby on back and forth movement of said actuator said grooves and keys cooperate in moving said jaws to and from said axis.

4,424,978

VEHICLE FOR CHILDREN

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Feb. 19, 1982, Ser. No. 350,314
Int. Cl.³ A63G *19/18*
U.S. Cl. 280—1.13 **6 Claims**



1. A vehicle for children comprising: a vehicle body having a front housing and a body remainder excluding said front housing, means for opening and closing said front housing with respect to the body remainder, said body remainder having a surface opposed to the front housing with a space left therebetween, said means for opening and closing including a first spring urging said front housing in a direction to open the latter, engaging means for selectively establishing the closed state of said front housing against the resilience of said first spring, said vehicle further comprising an instantaneously actuatable object disposed in a space defined between said body remainder and said front housing, a second spring urging said instantaneously actuatable object against the lower surface of said front housing when the latter is in its closed state, so as to put said instantaneously actuatable object into instantaneous visual action when the front housing is opened, and a first shaft turnable with respect to the body remainder for supporting said instantaneously actuatable object.

4,424,979

SUSPENSION AND STEERING ASSEMBLY FOR SNOWMOBILE

Izumi Takagi, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 146,910, May 5, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,589
Int. Cl.³ B62B *13/08*
U.S. Cl. 280—21 R **5 Claims**

1. A suspension and steering assembly for a snowmobile including at least one ski for supporting a front portion of its body and also for steering the snowmobile, comprising:

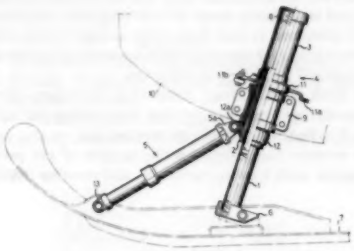
substantially cylindrical strut means including a first or inner concentric strut member and a second or outer circumferential strut member telescopically sliding one into the other;

spring means operative to urge said two strut members to slide out of each other;

shock absorber means connected at one end to the ski and at the other end, through a substantially horizontal bearing, to the second or outer strut member to extend obliquely;

means for supporting the second or outer strut member on the snowmobile body for rotational movement while preventing its axial movement and its lateral movement; and

annular steering means fixedly secured to the second or outer strut member for rotating the strut means about its own axis when a steering gear is actuated, said annular steering means comprises two openings, one opening to



receive said steering rod connected to said steering gear, and said other opening to receive said tie rod of said other suspension and steering assembly for said snowmobile;

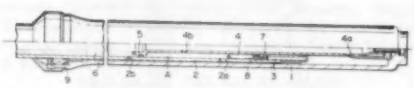
wherein the first or inner strut member is pivotally connected at its lower end to the surface of the ski and said shock absorber means is pivotally connected to the ski at a point away from the point at which said strut means is pivotally connected to the ski.

4,424,980

FRONT FORK FOR MOTORCYCLE OR THE LIKE

Shizumasa Tsukamoto, Iwata, and Yoshihito Ieda, Fukuroi, both of Japan, assignors to Showa Manufacturing Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1982, Ser. No. 338,875
Claims priority, application Japan, Jan. 13, 1981, 56-3523; Jan. 14, 1981, 56-4342
Int. Cl.³ B62K *25/08*
U.S. Cl. 280—276 **7 Claims**



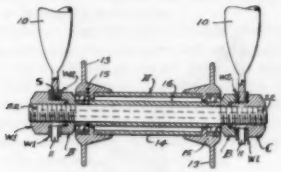
1. A front fork suitable for a motorcycle comprising: an inner cylinder mechanism which includes a main cylinder and a main piston disposed at the lower end thereof; an outer cylinder slidably fitted to said inner cylinder mechanism; a sheet pipe anchored at the bottom portion of said outer cylinder and slidably fitted to said inner cylinder mechanism, said sheet pipe including an auxiliary piston disposed at the upper end thereof and having an oil port formed in the side of the lower portion thereof; and orifice means for allowing the oil between said main piston and said auxiliary piston to flow into one of said inner cylinder mechanism and said sheet pipe at the extension stroke of said front fork to thereby stepwise reduce an attenuating force; said orifice means including an oil port formed at the side of the lower portion of said inner cylinder mechanism, at least one orifice formed in the axial direction in the upper portion of said inner cylinder mechanism, and an orifice formed at the side of the upper portion of said sheet pipe.

4,424,981

HIGH STRENGTH LIGHT WEIGHT BIKE AXLE

William H. Maxwell, III, 22547 Decoro Dr., Saugus, Calif. 91350

Filed Jan. 25, 1982, Ser. No. 342,125
Int. Cl.³ B62K 25/02
U.S. Cl. 280—288 15 Claims



1. An axle assembly for mounting a wheel hub in the openings of spaced vehicle forks, said hub having a tubular housing with oppositely faced antifriction bearings spaced inwardly from the forks, and including in combination;

a tensioning member extending through the hub housing and projecting from the oppositely faced bearings, the opposite end portions of the tensioning member being threaded,

a pre-load member at each opposite end of the assembly and threaded onto the end portions of the tensioning member to occupy the space between the antifriction bearings and the vehicle forks to engage and pre-load said bearings,

a shear sleeve supportably extending through the fork opening at each opposite end of the assembly,

and a clamp member at each opposite end of the assembly and fastened to the end portions of the tensioning member for clamping the opposite ends of the assembly to the vehicle forks,

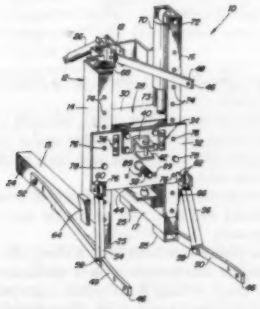
one of said members at each opposite end of the assembly being integral with the shear sleeve and the other of said members at each opposite end of the assembly having a counterbore receiving an end portion of the shear sleeve for load transfer in shear.

4,424,982

ATTACHMENT DEVICE FOR A MOTOR VEHICLE

Heinz Weiss, Bensheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Mar. 3, 1982, Ser. No. 354,272
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107228
Int. Cl.³ A01B 59/043
U.S. Cl. 280—461 A 19 Claims



1. An attachment device for facilitating the attachment of various implements to the chassis of a motor vehicle, said attachment device comprising:

(a) a first frame having a pair of generally L-shaped support members with vertical and horizontal legs, said vertical legs being connected together approximate an upper end by a cross bracket and said horizontal legs being pivotably attached at one end to said motor vehicle chassis, said first frame containing a three-point hitch having a top bar pivotably attached to said cross bracket and a pair of lower bars attached to each of said horizontal legs;

(b) means for tilting said first frame relative to said motor vehicle chassis, said means positioned between said chassis and said cross bracket;

(c) a second frame movably supported by said vertical legs of said first frame and containing a plurality of coupling elements arranged in a preset relationship for easy coupling to an attachable implement;

(d) drive means mounted on said first frame and connected to said second frame for moving said second frame in a stepless manner along said vertical legs of said first frame;

(e) a pair of rods connected between said second frame and each of said lower bars of said three-point hitch, said rods enabling said lower bars to be moved relative to said top bar to facilitate easy hook-up of said three-point hitch; and

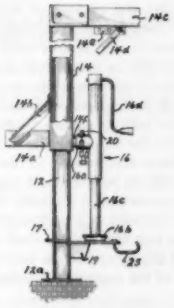
(f) mechanical means for locking said second frame to said first frame at predetermined heights along said vertical legs of said first frame.

4,424,983

IMPLEMENT COUPLING ARRANGEMENT

Douglas L. Walters, Rte. 1, Otwell, Ind. 47564

Filed Nov. 27, 1981, Ser. No. 325,382
Int. Cl.³ B60S 9/08
U.S. Cl. 280—475 1 Claim



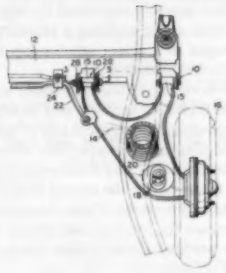
1. A coupling arrangement between an implement and a driving vehicle comprising a base supported upstanding column positioned on a receiving surface, a sleeve slidable on said upstanding column and forming part of a connecting assembly between said implement and said driving vehicle, a freely movable angled plate with an underlying web selectively wedged along said upstanding column at a desired operative location and having a hanger extending therefrom, a jack selectively separable from said sleeve and having a base supported by said angled plate, the weight of said jack wedging said angled plate and said web against said column, said sleeve and said jack having cooperating extending portions whereby said jack is freely rotatable with respect to said sleeve from a first vertically adjustable position to a second lateral transporting position when said angled plate and said underlying web abut the bottom of said sleeve and the bottom of said base supported upstanding column, and removable means maintaining said jack at said second lateral transporting position, and said jack having a handle received on said hanger at said second lateral transporting position.

4,424,984

ALIGNMENT ADJUSTING DEVICE FOR VEHICLE

Harunori Shiratori; Kenichi Kikuchi, and Yoshikazu Moriya, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 15, 1982, Ser. No. 358,209
Claims priority, application Japan, Apr. 7, 1981, 56-52287
Int. Cl.³ B62D 17/00
U.S. Cl. 280—661 6 Claims



1. A device for adjusting the alignment of suspension arms for a vehicle comprising a shaft member oscillatably supporting a suspension arm and inserted into respective slots provided in a pair of arm supporting members secured fixedly to a chassis, and a pair of cams disposed respectively at both ends of said shaft member and engaging guide walls provided on said respective arm supporting members, said shaft member comprising a bolt and a hollow shaft for receiving the bolt, one of said pair of cams being a disk disposed eccentrically and non-rotatably fixed to one end portion of said hollow shaft, the other of said pair of cams being an engaging member engaging the other end portion of said hollow shaft and having a cam face with the same profile as that of said disk, said hollow shaft having a non-circular fit portion at the opposite end portion to that where said disk is disposed and said engaging member having a non-circular hole extending axially outward from the inside surface thereof for receiving the fit portion of said hollow shaft with a shape conforming to that of the fit portion, whereby relative rotation between said engaging member and said hollow shaft is prevented, a threaded hole communicating outward to said non-circular hole and receiving an end portion of said bolt inserted into said hollow shaft from the outside of said disk and a tool engaging portion provided more outward than said cam face of the engaging member.

4,424,985

OUTRIGGER SUPPORT ARRANGEMENT

Terry M. Holmes, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

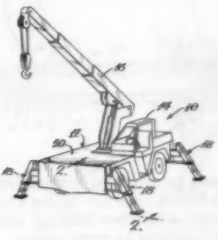
Filed Sep. 8, 1981, Ser. No. 300,182
Int. Cl.³ B60S 9/12
U.S. Cl. 280—766.1 3 Claims

1. An outrigger support arrangement for a wheeled equipment frame, comprising:

an outrigger having an outrigger leg including an extensible leg portion engageable with the ground, and generally horizontally disposed outrigger beam fixed to said leg, said outrigger beam extending transversely of said equipment frame and said outrigger leg includes an outer leg portion fixed to said outrigger beam within which said extensible leg portion is telescopically disposed, and a fluid extensible leg cylinder and piston respectively connected at its ends to said outer leg portions and said extensible leg portion, which leg extends generally downwardly and angularly outwardly of said beam,

an outrigger cavity defined by a pair of generally vertical, longitudinally spaced walls of said frame within which said outrigger beam extends,

means including a fluid extensible cylinder and piston for moving said outrigger between a stowed position wherein said outrigger is substantially nested within said cavity and an extended position wherein said leg is spaced laterally outwardly of said frame for engagement of said extensible leg portion with the ground,



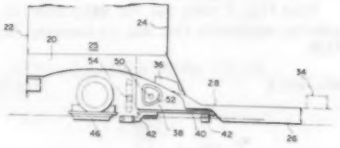
upper beam support means comprising a pair of horizontally disposed, laterally extending upper beam supports respectively fixed to said walls extending from the lateral edge portion of said frame inwardly thereof, said outrigger leg extending between said upper beam supports when said outrigger is in the stowed position, whereby when said outrigger is in said extended position said beam reactively engages said upper beam support means outwardly of a plane defined by an outwardly facing surface of said outrigger leg when said outrigger is in said stowed position.

4,424,986

IMPACT ENERGY ABSORBING STRUCTURE FOR F-F TYPE MOTOR VEHICLE

Kazutoshi Mizuno, Fujisawa, and Shigeo Ono, Hamura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 3, 1981, Ser. No. 299,131
Claims priority, application Japan, Sep. 22, 1980, 55-132713
Int. Cl.³ B62D 21/00
U.S. Cl. 280—784 8 Claims



8. An impact absorbing structure for a front engine front wheel drive vehicle comprising:

a vehicle cabin having a floor panel, side sills which extend along the lateral sides of said cabin and a cross member which extends laterally across said floor panel and which interconnects said side sills;

an engine compartment which is separated from said cabin by a bulkhead and in which an engine and transmission unit is disposed;

a pair of side members which extend along the lateral sides of said engine compartment at a predetermined level above the level of said floor panel, said predetermined level being selected to provide space beneath said side members to permit a drive connection between said engine and transmission unit and a pair of forward wheels of said vehicle;

a pair of extension members which are connected at the aft ends thereof to said cross member and which curve up-

wardly and outwardly to connection at the forward ends thereof with the aft ends of a respective side member;

a pair of suspension mounting structures for each supporting one of said forward wheels, said suspension mounting structures being secured in part to said extension members;

said engine and transmission unit being disposed in said engine compartment so that the lower aft portions thereof are aligned with portions of said side members and said suspension mounting structures;

said side members being adapted to buckle laterally outward upon a frontal collision whereby said engine and transmission unit may be driven in the aft direction without being lifted within said engine compartment to stagewisely cause, without excessive deformation the deformation of said suspension mounting structures so that the impact energy may be dissipated through said extension members to said cross member and said side sills.

4,424,987

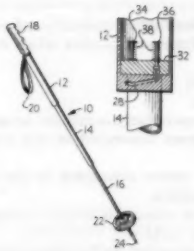
TELESCOPIC SKI POLE ASSEMBLY

Gregory P. Ryder, 5551 Zinman Ave., Altasloma, Calif. 91701

Filed Sep. 28, 1981, Ser. No. 306,415

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—823 **10 Claims**



1. A telescopic ski pole having at least first and second elongated tubular members, said first elongated tubular member having a diameter greater than said second elongated tubular member,

said first elongated tubular member having at one axial extremity thereof a radially inwardly extending flange defining a bore therein dimensioned and configured for engagement with the exterior surface of said second elongated tubular member,

said second elongated tubular member having at one axial extremity thereof a radially outwardly extending flange having a circumferential surface dimensioned and configured for engagement with the interior bore of said first elongated tubular member,

pin means carried on one of said flanges, and

slot means defined in the other of said flanges and configurated and sized for engagement with the pin means, the pin means being selectively engageable in the slot means for locking engagement between the flanges to prevent relative axial movement between the first and second tubular members.

4,424,988

FRANGIBLE PIPE COUPLING

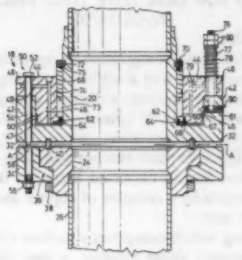
Douglas B. Cowx, Welland, Canada, assignor to Consumers' Gas Company Limited, Willowdale, Canada

Filed Dec. 28, 1981, Ser. No. 334,717

Int. Cl.³ F16L *55/00, 37/00, 17/00, 35/00*

U.S. Cl. 285—2 **5 Claims**

1. A frangible pipe coupling comprising a pair of pipe members, frangible means connecting the pipe members together, said frangible connecting means comprising a plurality of frangible connectors extending between the pipe members and normally holding the pipe members in sealed engagement with one another, an annular member surrounding one of the pipe members and being slidably mouned thereon for longitudinal sliding movement relative thereto, said annular member cooperating with said one pipe member to form a chamber therebe-



tween, means for supplying fluid under pressure into said chamber to effect longitudinal sliding movement of the annular member relative to the said one pipe member, said annular member being connected to the frangible connectors to cause said relative movement betwen the annular member and the said one pipe member to break said frangible connectors and thereby separate the pipe members from one another.

4,424,989

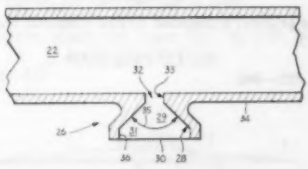
DRAIN HOLE

William R. Spencer, Springdale, and George F. Whitley, Jr., Madeira, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 2, 1980, Ser. No. 165,432

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—14 **5 Claims**



1. An improved drain hole in a pneumatic line for draining liquid from a pneumatic line of a gas turbine engine, said pneumatic line having inner and outer peripheral surfaces and wherein said drain hole has inner and outer portions in respect to said pneumatic line, and wherein said inner portion extends between said inner and outer peripheral surfaces and has an inner opening into said pneumatic line that is smaller in area relative to said outer opening to prevent excessive loss of pressurized gas from said line and which is of a size which would otherwise support liquid in the pneumatic line by surface tension forces of the liquid when the line is not under pressure except that said drain hole additionally comprises:

a progressive enlargement in cross-sectional area of an interior region of the drain hole, said enlargement initiating substantially at said outer peripheral surface and wherein the enlargement has an outer opening with a larger cross-sectional area than that of the inner opening, said larger outer opening being provided for the purpose of preventing surface tension of said liquid at said outer opening from supporting buildup of liquid within said pneumatic line during periods when said pneumatic line does not contain pressurized gas.

4,424,990

THERMOCHROMIC COMPOSITIONS

Lawrence J. White, San Jose, and Tamar G. Gen, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 116,707, Jan. 30, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 325,088

Int. Cl.³ C09D *5/26*; G01K *11/14, 11/16*; F16L *47/00*; *9/14, 21/00, 55/00*

U.S. Cl. 285—381 18 Claims

1. A thermochromic composition comprising a mixture of basic copper carbonate and a sulfur-containing organic acid; said composition undergoing a distinct change of color at temperatures in the range of from about 165° C. to about 240° C.

8. A thermochromic paint composition comprising a liquid paint formulation having dispersed therein a thermochromic component comprising a complex of copper and a sulfur-containing organic acid.

14. A coupling which comprises a hollow cylindrical heat-recoverable memory metal member, a liner inserted in said heat-recoverable member in intimate contact therewith, a sealant coated on the interior surface of said liner and a thermochromic paint composition applied to at least a portion of the exposed surface of the coupling, said thermochromic paint composition comprising a liquid paint formulation having dispersed therein a thermochromic component comprising a complex of copper and a sulfur-containing organic acid.

4,424,991

COMPOSITE CONNECTOR

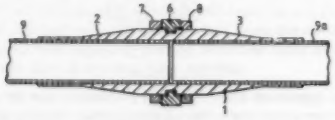
Frederick W. L. Hill, Lechlade, and Robin J. T. Clabburn, Highworth, both of England, assignors to Raychem Limited, London, England

Division of Ser. No. 964,850, Nov. 27, 1978, Pat. No. 4,309,807, which is a continuation of Ser. No. 742,562, Nov. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 741,523, Nov. 12, 1976, abandoned. This application Aug. 31, 1981, Ser. No. 297,718

Claims priority, application United Kingdom, Nov. 17, 1975, 47252/75

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—381 16 Claims



1. A connector, having a bore therethrough, which comprises a circumferentially continuous, tubular member having a first portion of a greater external diameter and a second portion of a lesser external diameter, than said first portion at least a portion of the tubular member having an elongated tapered outer surface extending between said first and second portions, and, positioned about said tubular member away from the second portion, a band that is relatively narrow compared to the length of the elongated tapered outer surface, the band being made from a memory metal which exhibits a relatively low modulus of elasticity at a first temperature and a relatively high modulus of elasticity at a second temperature higher than the first temperature, the band having been expanded solely by being forced at the first temperature along and against the taper so as to expand the band, the relatively high modulus of elasticity of the material of the band being such that when the band is brought to said second temperature, it contracts and deforms the tubular member.

4,424,992

CORD FEED AND DELIVERY DEVICE SUPPLYING A KNOTTER

Ulrich Hegnauer, Sandackerweg 12, CH-3363 Oberoenz, Switzerland

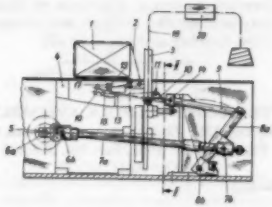
PCT No. PCT/CH79/00007, § 371 Date Nov. 2, 1979, § 102(e) Date Oct. 18, 1979, PCT Pub. No. WO79/00681, PCT Pub. Date Sep. 20, 1979

PCT Filed Jan. 25, 1979, Ser. No. 209,103

Claims priority, application Switzerland, Mar. 2, 1978, 2240/78

Int. Cl.³ A01D *59/04*; B65H *69/04*

U.S. Cl. 289—2 2 Claims



1. A machine for binding up large sized packages of bundles, particularly packages and bundles which are palletized, comprising

a binding cord;

driving means;

a crank shaft operatively connected to said driving means;

connecting means connected at one end to said driving means;

rocking lever means connected to the other end of said connecting means;

push rod means connected to said rocking lever means and having a free end;

a push rod head carried by said free end of said pushing rod means;

cord gripping means adapted to grip said binding cord;

cording driving means for moving said binding cord to said gripping means;

eyelet means for allowing said binding cord to pass therethrough;

a tensioning device for tensioning said binding cord passed through said eyelet means; and

a knotter for knotting said binding cord.

4,424,993

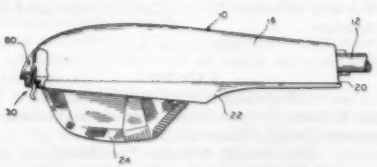
LATCH MECHANISM FOR LUMINAIRE

Billy L. Shelby, and William C. Moore, both of Memphis, Tenn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,389

Int. Cl.³ E05C *3/14*

U.S. Cl. 292—128 4 Claims



1. A latch mechanism for an outdoor luminaire of the type having a generally stationary upper housing affixed at one end to a mast arm, a lower housing hinged to said upper housing adjacent the one end thereof, and in which said lower housing

includes refractor structure between the hinged end of the housing and the end remote from said hinged end; the latch mechanism for the remote end of said lower housing including in combination a pawl, means for mounting said pawl internally in the lower housing adjacent said remote end and pawl receiver structure in said upper housing; said pawl comprising a unitary member having a central mounting portion including laterally extending mounting arms, a head for engaging said receiver and a trigger portion extending through an opening in the lower housing for accessibility externally of the lower housing; said mounting means comprising integral pocket structure of said lower housing including a pair of spaced apart hook members affixed said lower housing to receive said arms and hold said latch member against upward movement, torsion spring means mounted on said arms with said torsion spring means having at least one tang resting on an integral rib upstanding from said lower housing to prevent downward movement of said pawl member, said torsion spring means having a projection engaging and biasing the pawl head toward the receiver in the upper housing to latch the lower housing against pivotal movement relative to the upper housing, and said receiver comprising an opening in said upper housing, said pawl member being removable from said lower housing pocket structure with said pawl head released from the upper housing by depression of the torsion spring tang and release of the pawl arms from the hook members to allow removal of the pawl and springs from the pocket structure for replacement without the need for any tools.

4,424,994

SECURITY SEALS

Anthony S. Dowden, London, England, assignor to American Casting and Manufacturing Corporation, Plainview, N.Y.

Filed Jul. 22, 1981, Ser. No. 285,871

Claims priority, application United Kingdom, Jul. 24, 1980, 8024224

Int. Cl.³ B65D *33/34*

U.S. Cl. 292—318 **20 Claims**

1. A security seal comprising a main body element formed with a passage therein, said passage having a first portion leading from an entry opening and a second portion leading at an angle from said first portion; an elongate flexible element, one end of which is fixed to the main body element and the other end of which is dimensioned to pass into said passage; said body element defining at the junction between said first portion and the second portion of the passage, an extension of said first portion which is so dimensioned as to prevent the entry of the flexible element into the extension, but to permit the entry into the extension of an element introduced into the first portion of the passage which is thinner than the flexible element; said flexible element being formed along at least part of its length with formations adapted to engage with cooperating formations provided within at least the second portion of said passage, and the engagement between the formations being such as to prevent withdrawal of the flexible element from the passage.

4,424,995

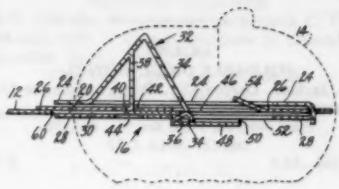
BALL TYPE SEAL

Richard S. Guller, Newton; Jacob E. Mautner, Keyport, both of N.J., and Sigurd M. Moberg, Etlan, Va., assignors to E. J. Brooks Company, Newark, N.J.

Filed Nov. 5, 1980, Ser. No. 203,565

Int. Cl.³ B65D *27/30, 33/34, 55/06*

U.S. Cl. 292—323 **10 Claims**



1. A body for a seal of the ball type comprising a housing having an aperture and means in the housing for receiving a relatively rigid shackle end in locking non-removable engagement, said means comprising a deformable leg having a portion initially positioned in the path of the inserted shackle end, said leg being positioned and dimensioned so as to be deformed by the insertion of the shackle end, and a locking leg having a free end, said locking leg being so associated with the deformable leg that the deformation of said deformable leg caused by the insertion of said shackle end causes the end of the locking leg to pass through the shackle aperture to thereby prevent movement of the shackle out of the housing.

4,424,996

COMBINATION BUMPER-AND-RADIATOR STRUCTURE

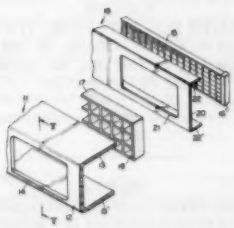
Kazuhiko Yoshiyuki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Dec. 8, 1981, Ser. No. 328,705

Claims priority, application Japan, Dec. 26, 1980, 55-186378

Int. Cl.³ B60R *19/10*

U.S. Cl. 293—117 **1 Claim**



1. A combination bumper-and-radiator structure for attachment to the front end of an automotive vehicle having a fore-and-aft direction, comprising:

a front bumper having a horizontally elongated base wall portion, and upper and lower wall portions elongated along and rearwardly of the base wall portion, the base wall portion being formed with at least one air inlet opening;

a radiator grille positioned between said upper and lower wall portions of said front bumper and partially exposed to the open air through said air inlet opening;

a resilient honeycomb member horizontally elongated and interposed between the base wall portion of said front bumper and said radiator grille for absorbing the energy of a

collision exerted on the base wall portion of said front bumper; and

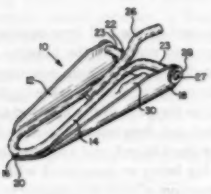
a bumper reinforcement member having a horizontally elongated base wall portion formed with an opening held in communication with said air inlet opening through said resilient honeycomb member, and upper and lower wall portions elongated along and rearwardly of the base wall portion, the bumper reinforcement member being interposed between said resilient honeycomb member and said radiator grille.

4,424,997

FOLDABLE DIGGING TOOL

Milan D. Jackson, Oregon City, Oreg., assignor to U-Dig-It Enterprises, Inc., Boring, Oreg.

Filed Nov. 22, 1982, Ser. No. 443,436
Int. Cl.³ A01A *1/22*
U.S. Cl. 294—53.5 **8 Claims**



1. A foldable hand-held digging tool having an open position and a closed position, and consisting essentially of:

a. a digging member and a holding member;

b. said digging member having a digging end and a first fastening end, said first fastening end having a first stop means incorporated therewith;

c. said holding member having a handle end and a second fastening end, said second fastening end having a second stop means incorporated therewith;

d. pivoting means connecting said first fastening end to said second fastening end; and

e. said first stop means engaging said second stop means when said digging tool is in said open position.

4,424,998

CLOTH DOLL STUFFING TOOL

Cecilia Lile, 2415 W. 46th St., Chicago, Ill. 60632

Filed Aug. 18, 1981, Ser. No. 293,946
Int. Cl.³ B25B *7/00*
U.S. Cl. 294—118 **1 Claim**

1. A tool for reaching into the confined sections of cloth dolls or similar constructions, having smooth or rounded edges or corners on all exposed external surfaces, which can grasp the doll fabric for turning the doll inside out and which can grasp filling material for placement within the doll, consisting essentially of:

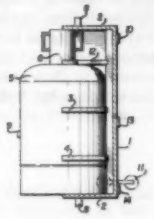
two members joined by a pivot means; each of said members comprising a finger guide, a long thin shank extending from said finger guide to the location of said pivot means, and an opposing jaw which is shorter in length than said shank and which has a flat inner surface at its outer end, the tip of said jaw being rounded to avoid a point, the ratio of the length of the shanks to the length of the jaws being between 4:1 and 5:1; said members being long, thin and straight, and not separated at essentially all points along the lengths of said members when the tool is in the closed position; the width of the tool, in closed position, being substantially the same at all lengths of the tool except at the finger guides; and at least one jaw has surface irregularities on its inner surface which are confined along the midline of the jaw thereby leaving a smooth area of jaw surface around the border of the inner surface of said jaw, the inner surfaces of each of the jaws necessarily touching when the tool is in closed position.

4,424,999

GAS BOTTLE CARRYING CASE

Eric J. Commins, Chemin Neuf, 97417 - 1a Montagne, Reunion Island, France

Filed Jul. 10, 1981, Ser. No. 282,211
Claims priority, application France, Jul. 11, 1980, 80 15763
Int. Cl.³ B62B *1/26*; B65G *7/12*
U.S. Cl. 294—142 **3 Claims**



1. A carrying case for a gas bottle comprising a cylindrical body portion and a neck portion having a cross-section less than that of said body portion, said case comprising a rectangular base; a wall extending transversely from each side of said base, said walls being joined at their ends to define with said base an internal space and extending to a height substantially equal to half the circumference of a gas bottle supported in said case such that the top edge of each of said walls is adjacent the surface of said gas bottle at its greatest cross-sectional width; cradle means mounted in said space for supporting said gas bottle with the axis thereof substantially parallel to said base, said cradle means comprising at least two cradles each mounted on said base, at least one of said cradles being adapted to support said cylindrical body portion of said gas bottle about substantially half its perimeter and one of said cradles being adapted to support said neck portion of said gas bottle; releasable strip means attached to opposite walls of said carrying case for retaining said gas bottle in place on said cradles; and a handle mounted on each of said walls adjacent said top edge thereof, said handles being mounted on the exterior surfaces of said respective walls.

4,425,000

FIRE HOSE DONUT ROLL CARRIER

Paul Keck, Jr., 886 NE. 117 St., Biscayne Park, Fla. 33161

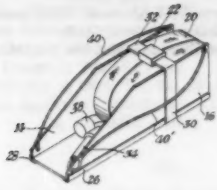
Filed Oct. 9, 1981, Ser. No. 310,088
Int. Cl.³ B65D *63/18*
U.S. Cl. 294—165 **4 Claims**

1. A fire hose carrier for carrying a rolled hose ready for unrolling for use in a fire comprising:

a base means for supporting said rolled hose ready for unrolling for use in a fire;

two side members each having a proximal portion and a distal portion, said proximal portion of each of said side members movably connected to said base means from a position in the plane of said base means when said hose carrier is opened for using said rolled hose in a fire to a

position generally perpendicular to said base means when said hose carrier is closed for carrying said rolled hose; and



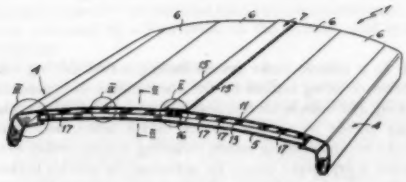
a means for retaining said two side members in said position generally perpendicular to said base member with said rolled hose positioned therebetween and resting on said base member, said means connected to said hose carrier.

4,425,001

CARRIAGE BODY FOR PUBLIC TRANSPORTATION VEHICLES

Ambrogio Mauri, Via Garibaldi, 254 - Desio, Milano, Italy

Filed Jan. 21, 1980, Ser. No. 113,869
Claims priority, application Italy, Jan. 22, 1979, 19503 A/79
Int. Cl.³ B62D *27/02*
U.S. Cl. 296—178 **3 Claims**



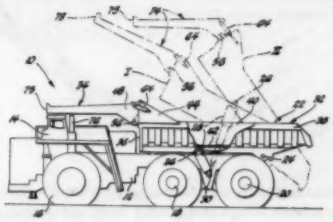
1. A roof structure for a carriage body for passenger transportation vehicles in combination with a pair of opposite horizontally spaced apart sidewall structures having opposite longitudinal supporting members for the roof structure, the roof structure comprising arcuated supporting crossbeams spanning between said opposite longitudinal supporting members and seat formations in said longitudinal supporting members for receiving therein the ends of said crossbeams, wide elongated mutually juxtaposed covering sectional members having an underside surface and longitudinal reinforcing ribs depending from the underside surface and resting on said crossbeams and extending in the direction of said longitudinal supporting members, wherein at least some of said covering sectional members have mutually overlapping longitudinally extending edges each having one hook-like shaped formation on one side of said covering sectional member and another hook-like shaped formation on the other side of the covering sectional member, said one and said another hook-like shaped formations being complemental in shape for mutual engagement, both said one and said another hook-like shaped formations being downwardly offset from said underside surface of the covering sectional member and wherein the roof structure further comprises at least one mechanical expansion joint connection arranged between and adjustably connecting two consecutive covering sectional members, the mechanical expansion joint connection comprising a longitudinally extending elongated sectional member having seat formations on opposite sides thereof facing and adjustably receiving therein the respective edges of the adjacent consecutive covering sectional members, and wherein said one hook-like shaped formation comprises a first lip forming sharp angle with the underside surface of said covering sectional member and said another hook-like shaped formation having a tongue including a first tongue portion forming an obtuse angle with said underside surface and substantially parallel with said first lip and a second tongue portion bent hook-like with respect to said first tongue portion and defining an inclined notch therewith for snugly receiving therein said first lip of an adjacent said covering sectional member, said covering sectional members having a top surface.

4,425,002

HINGED CAB GUARD

Ronald G. Coleman, Thamesford, and Kenneth C. Philbrook, Dorchester, both of Canada, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1981, Ser. No. 309,930
Int. Cl.³ B60P *1/28*
U.S. Cl. 298—1 R **3 Claims**



1. A dump body for a dump truck adapted to be parked with an enclosure having a low ceiling, said dump truck having a frame one end of which is provided with an operator's cab and the other end of which is provided with a pivotal connection that supports said dump body for movement from a lowered-carry position to a raised-dump position; said dump body comprising a body portion defined by a front wall, a pair of side walls, and a floor section; a cab guard extending forwardly from said front wall of said body portion and having a free front end located above said operator's cab; hinge means connecting said cab guard to said body portion adjacent said front wall, said hinge means being positioned on said body portion and on said cab guard so as to allow said free front end of said cab guard to pivot downwardly relative to said body portion towards said operator's cab; and actuator means operatively connected to said cab guard for causing said free front end of said cab guard to pivot downwardly after said dump body is moved from said lowered-carry position to an intermediate raised position so that said free front end of said cab guard is lowered prior to said dump body being raised to said raised-dump position and thereby does not contact any portion of said ceiling.

4,425,003

SINGLE WELL-MULTIPLE CAVITY SOLUTION MINING OF AN INCLINED STRUCTURE

Clark H. Huff, Moab, Utah, assignor to Texasgulf Inc., Stamford, Conn.

Filed Nov. 4, 1981, Ser. No. 318,104
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **7 Claims**

1. A method of solution mining a bed of soluble ore disposed in sloping subterranean strata disposed beneath an insoluble stratum by developing contemporaneous multiple cavities through the same borehole which comprises the steps of:

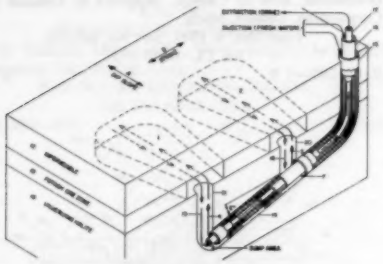
(a) establishing a borehole generally along the formation strike, directionally drilled to a nearly horizontal attitude for a determined distance in the soluble zone just below the ore zone of interest;

(b) injecting solvent into portions of said horizontal borehole through the annular tubing spaces in such a manner

that two or more chimneys will be developed in the soluble zone below the ore zone of interest, exposing said ore zone of said solvent;

(c) injecting solvent into said annular tubing spaces in said borehole in such a manner that the solvent will be directed in an updip direction beneath said insoluble zone and within said ore zone to develop cavities with mining faces remote from said borehole;

(d) withdrawing solvent with dissolved ore through said borehole at a sump area;



(e) adjusting such withdrawal to provide for down flow of the solvent across said mining faces and downwardly in a downdip direction along the floors of said cavities to said exit point at a rate sufficient to extract said ore stratum without appreciable mining of vertically adjacent strata; and,

(f) developing additional cavities along the nearly horizontal portion of said borehole, as space permits and as previous solution mining cavities are depleted.

4,425,004

BANDED VEHICLE HUB

William E. Carmichael, 2592 McBride Crescent, Prince George, B.C., Canada, and Wayne Rodacker, Grande Prairie, Canada, assignors to William E. Carmichael, Prince George, Canada

Continuation-in-part of Ser. No. 75,514, Sep. 13, 1979, Pat. No. 4,315,360. This application Dec. 24, 1981, Ser. No. 334,323

Int. Cl.³ B21K *1/34*

U.S. Cl. 301—8 **7 Claims**

1. A banded hub adapted to fit within and to support a tire rim generally complementary to the hub, the hub having a central boss with a central axis, a plurality of spokes extending from the boss, and webs extending between the spokes; each spoke having means to secure the tire rim thereto, an outer end, and a pair of side portions and a front portion blending smoothly together so as to be generally U-sectioned, the hub being characterized by:

(a) an annular rim formed as preformed ring and having an outer face adapted to be accepted within an inner face of the tire rim, and an inner face welded to the outer ends of the spokes.

4,425,005

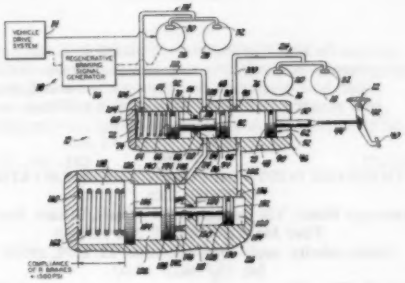
VEHICLE BRAKING SYSTEM AND METHOD OF BRAKING

Edward H. Warwick, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1982, Ser. No. 362,243

Int. Cl.³ B60T *13/74*

U.S. Cl. 303—3 **3 Claims**



1. In a vehicle brake system having a first driving wheel capable of being braked by the combination of regenerative braking and vehicle service brakes, a second wheel capable of being braked by vehicle service brakes alone, and vehicle service brake actuating means including service brakes at said wheels, a first brake circuit for actuating the service brakes at the first wheel, a second brake circuit for actuating the service brakes at the second wheel and adapted to provide a signal of second brake circuit actuation, and an input member controlled by vehicle operator to provide input member travel and input force, the improvement to combine regenerative braking and service brakes in a manner to effect a desired braking effort at both wheels, said improvement comprising:

signal generating means generating a signal directly proportional to the amount of regenerative braking effort acting on said first wheel;

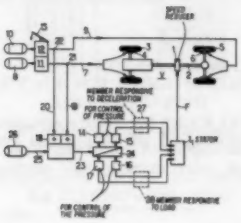
first signal receiving means receiving said signal to generate a sufficient force in opposition to first brake circuit actuation of the service brakes of the first wheel to permit such first brake circuit actuation only to the extent that said amount of regenerative braking effort is less than the amount of braking effort at the first wheel as required by the vehicle operator's control of the input member;

and a first brake circuit compliance control member receiving said regenerative braking effort signal and said signal of second brake circuit actuation and including a first means operating in one manner in response to said signals, said control member including second means operating in a manner to oppose the operator of said first means and having operating characteristics which are substantially the same as the actuating characteristics of the vehicle service brake actuating means for the service brakes at said first wheel when the first wheel is being braked only by the vehicle service brakes to produce all of the desired braking effort acting on the first wheel, so that the travel and input force of the input member felt by the vehicle operator during control thereof are substantially the same during all braking of said wheels irrespective of the extent that regenerative braking effort is used.

4,425,006
SPEED REDUCER CONTROL DEVICE FOR A VEHICLE HAVING TWO INDEPENDENT PRESSURIZED FLUID BRAKING CIRCUITS

Philippe Bertrand, Maisons-Lafitte, and Jean-Pierre Machillot, Saint-Gratien, both of France, assignors to Labavia S.G.E., Bois D'Arcy, France

Filed Apr. 6, 1981, Ser. No. 251,228
Claims priority, application France, Apr. 11, 1980, 80 08227
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—3 **8 Claims**



1. A system to control energization of a speed reducer mounted on a rotatable drive member of a vehicle such that upon energization, the speed reducer imparts a torque to the drive member which reduces the velocity of the vehicle, said vehicle having a front wheel train and a rear wheel train, each having independent pressurized fluid braking circuits and both being activated by a foot pedal in the vehicle, said system comprises:

a control fluid supply means;

a plurality of pressure contacts adapted to receive said control fluid, said pressure contacts being successively actuated as the pressure of said control fluid increases and being operatively connected to said speed reducer so that when said plurality of pressure contacts are successively actuated, said speed reducer undergoes increased energization intensity;

first and second sensor means positioned for sensing the fluid pressure in the braking circuits of said front wheel train and said rear wheel train, respectively; and

pressure adjustment means connecting said control fluid supply and said plurality of pressure contacts and coupled to said first and second sensor means, whereby said pressure adjustment means adjusts the pressure of the control fluid received from the control fluid supply means to a control pressure in response to the higher of the pressures sensed by said first and second sensor means and then supplies the control fluid at the control pressure to said plurality of pressure contacts.

4,425,007
TREAD BELT LINK AND COOPERATING DRIVE TUMBLER

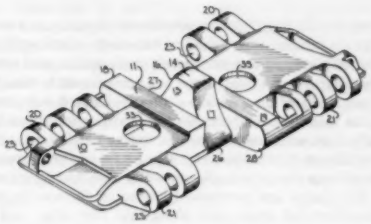
Ronald J. Soeteber, New Berlin, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

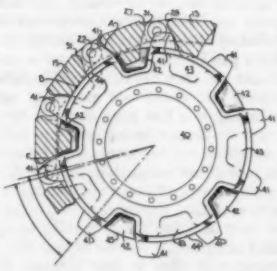
Filed Feb. 12, 1981, Ser. No. 233,856
Int. Cl.³ B62D *55/12, 55/20*
U.S. Cl. 305—11 **5 Claims**

1. In a tread belt drive the combination of:

a tumbler wheel having a segmented rim, the rim having its segments alternately offset laterally from one another to form two rows of rim segments in which the segments of each row are circumferentially spaced from one another; a plurality of driving teeth positioned between the rows, the teeth projecting radially outwardly therefrom and being in locations alongside the termini of said rim segments; at least one of said teeth being positioned relative to said rim segments such that it has a rim segment on at least a portion of each lateral side thereof and it extends radially outward from both of said laterally positioned rim segments; and pockets located between said driving teeth that open both radially outward and laterally from the tumbler wheel;

a plurality of links connected to one another to form a tread belt and engageable with said tumbler wheel, the links having a link body that has a ground engaging bottom and an upper face; a guiding cog rising upwardly from the central region of said top face that is receivable within a pocket of said tumbler wheel; a bearing surface on the upper face on each lateral side of said guiding cog that rides upon a rim segment of said tumbler wheel; a driven surface on the forward and aft sides of the cog that is located between the link bottom and the link top face and in vertical alignment with the cog to be engaged by the tumbler teeth; and connecting lugs along the forward and aft sides of the link body that interdigit with lugs of adjacent links for connection therewith, said connecting ears having connection openings with centers located beneath said bearing surfaces; and





said links when connected together forming openings between the bearing surfaces of adjacent links which are open at the link bottoms and which receive said tumbler driving teeth.

3. A tumbler wheel for a tread belt drive comprising:

a drive wheel having a plurality of circumferentially spaced teeth projecting radially outward from the wheel;

two rows of segmented bearing rims alternately offset laterally from each other on the sides of the teeth, the segments of each row being circumferentially spaced and being formed such that the teeth extend radially beyond the segments;

a plurality of pockets located between the teeth, the pockets opening radially outward, and opening laterally from the tumbler wheel between the rim segments; and

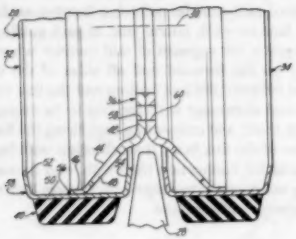
at least one of said teeth being positioned relative to said rim segments such that it has a rim segment on at least a portion of each lateral side thereof and it extends radially outward from both of said laterally positioned rim segments.

4,425,008

WHEEL FOR A TRACKLAYING VEHICLE

James B. Weeks, Haslett, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Aug. 17, 1981, Ser. No. 293,663
Int. Cl.³ B62D 55/14, 55/08
U.S. Cl. 305—24 5 Claims



1. An improved road wheel assembly for running on a track assembly of a crawler-type vehicle wherein the track assembly has a centrally located row of tapered guide spikes, said wheel assembly comprising a dual wheel set wherein each wheel of the set has a wheel disc with a centrally located bolt circle portion, an intermediate generally conical portion extending outwardly from said central portion and an axially extending peripheral flange portion terminating at a free edge thereof, a rim formed from flat strip stock externally mounted by press fit on said disc flange and permanently secured thereto by only one circumferential weld joint along said free edge, and an elastomeric tire carried on the outer surface of said rim, said disc having an outwardly narrowing tapered cross-section, said wheels of the set being mounted back-to-back relative to one another so as to be adapted to straddle the centrally located row of guide spikes of the associated track assembly, each said rim extending axially beyond the associated said disc flange and having a pair of integral flanges one at each of the opposite sides of said rim, each rim flange being spaced axially from said associated disc flange and extending radially inwardly and terminating in a free edge disposed clear of said associated disc, said rim flanges having sufficient radial length to reinforce the associated rim and accept the wear of the guide spikes as said rim rotates and passes along said track, each said disc bolt circle portion being thicker than said disc intermediate portion so as to withstand impinging lateral loads from the guide spikes and each said disc flange portion being thinner than the associated intermediate portion of said disc, said rim and disc reinforcing each other at their juncture to thereby afford the greatest economy of material.

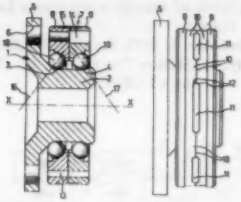
4,425,009

DUPLEX ANGULAR ROLLING-CONTACT BEARING AND METHOD OF ASSEMBLING SAME

Marcel Fillon, Alfortville, and Jean M. Monville, Paris, both of France, assignors to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed Jan. 11, 1982, Ser. No. 338,601
Claims priority, application France, Jan. 30, 1981, 81 01889
Int. Cl.³ F16C 33/60
U.S. Cl. 308—187.1 10 Claims

1. A duplex angular rolling-contact bearing comprising
first and second rows of rolling elements, and
a split race having two portions held in mutual contact along a radial joint plane defining registering front surfaces,
each of the registering front surfaces of said two portions of said race comprising at least two precision-machined axial projections constituting together a radial reference face,
said projections being separated by axial recesses adapted to receive the corresponding axial projection of the other race portion enabling, after a relative rotation of the two race portions, the introduction of the rolling elements of the second row, and
peripheral annular sealing means encompassing said race for



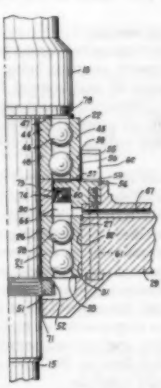
sealing the registering recesses of the two race portions when the corresponding projections of the two portions engage each other through their machined reference faces.

4,425,010

FAIL SAFE DYNAMOELECTRIC MACHINE BEARING

Roger A. Bryant, Commerce, and David R. Riggenbach, Watkinsville, both of Ga., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Nov. 12, 1980, Ser. No. 206,153
Int. Cl.³ F16C 19/10, 19/52
U.S. Cl. 308—227 10 Claims



1. A bearing fail-safe dynamoelectric machine comprising, in combination:
a frame;
a stator in said frame;
a rotor having a shaft;
bearing means journaling said shaft in said frame for cooperation of said rotor with said stator;
a first seat in said frame at one end thereof;
said bearing means including a first bearing mounted in said seat;
said first bearing journaling said shaft for transmission of the force of gravity and applied external forces on said rotor through said shaft and said first bearing to said frame seat;
a second bearing surrounding said shaft;
a second seat in said frame for cooperation with said second bearing;
means establishing said second bearing idling and nonload-bearing under normal machine operating conditions;
each of said first and second seats having a lateral shoulder and a longitudinal wall; and

said first bearing having an outer race mounted in engagement with said shoulder and wall of said first seat;

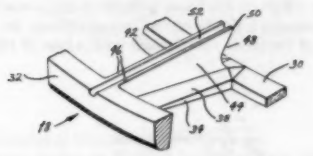
whereby upon a failure of said first bearing the rotor and shaft may move downwardly by gravity to nullify said idling means and establish said second bearing rotatably journaling said shaft to transmit the force of gravity on said rotor through said second bearing to said frame second seat.

4,425,011

POLYMER CAGE FOR A HIGH SPEED TAPERED ROLLER BEARING

Robert J. Cunningham, Canton, and Peter S. Orvos, Uniontown, both of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Jun. 7, 1982, Ser. No. 385,706
Int. Cl.³ F16C *33/46, 33/66*
U.S. Cl. 308—214 20 Claims



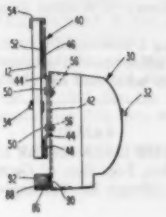
1. In a tapered roller bearing assembly including a cone having an outwardly presented tapered raceway and a thrust rib at the large diameter end of the raceway; a cup surrounding the cone and having an inwardly presented tapered raceway located opposite, but spaced from the raceway of the cone; and tapered rollers arranged in a row between the raceways of the cone and cup with the large diamenter ends of the rollers being presented toward and normally against the thrust rib, an improved cage for maintaining the correct spacing between the rollers, and for further directing a liquid lubricant to the thrust rib of the cone, said cage comprising: a large end ring that extends past the large ends of the rollers; a small end ring that extends past the small ends of the rollers; and bridges that extend between the two end rings and together with the end rings form pockets in which the rollers are contained, whereby the bridges separate adjacent rollers and maintain the correct spacing between the rollers, the bridges being at least in part located beyond the pitch circle for the rollers where they are configured to prevent the rollers from falling away from the cone when the cone is detached from the cup, at least some of the bridges having webs that project inwardly past the pitch circle and toward the cone raceway, each web extending substantially the entire length of the rollers so that one end of the web is located opposite the small end of the cone raceway and the other end is located opposite the large end of the cone raceway, each web having a groove that opens toward the cone raceway with the end of the groove that is located opposite the small end of the cone raceway being extended axially into the small end ring and further being closer to the axis of rotation for the bearing than the end of the groove that is located opposite the large end of the cone raceway, whereby a liquid lubricant that is introduced into the groove at the small end ring will flow through the groove under the influence of the centrifugal force in the rotating cone to be discharged from the groove in the region of the thrust rib so that the thrust rib remains lubricated as the large end faces of the rollers move along it.

4,425,012

ROLL TOWEL DISPENSER MOUNTING BRACKETS

Richard D. Kley, New Castle County, Del., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Mar. 23, 1981, Ser. No. 246,586
Int. Cl.³ B60N *19/00*
U.S. Cl. 312—37 9 Claims



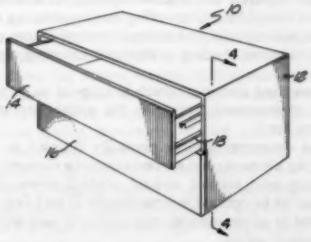
1. Apparatus for mounting a roll towel dispenser on a door of a recessed paper towel cabinet so that the lower portion of the dispenser is mounted in front of a recess, said apparatus comprising a bracket plate having a hooked end portion adapted to fit over the top edge and contact a rear surface of the door of the recessed cabinet, said bracket plate being adapted to be secured to the rear of the dispenser cabinet and a lower support bracket adapted to be secured to at least one inner wall of the recess and to the roll towel dispenser thereby providing support for the lower portion of the roll towel dispenser.

4,425,013

APPARATUS FOR LOCKING CABINET DRAWERS

Robert H. Killen, Pasadena, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.

Filed May 26, 1981, Ser. No. 267,133
Int. Cl.³ E05C *15/04;* E05B *65/46*
U.S. Cl. 312—216 5 Claims



1. In a file cabinet having top, bottom, rear and side walls and an open front, a plurality of slidable drawers arranged to slide from an inner closed position outwardly through the open front to an open position for removal of contents thereof, a lock means for preventing the movement to said open position of more than one of said drawers at a time, said lock means comprising:

a unitary bar slidably carried by one of said side walls adjacent said open front and vertically movable between first and second positions;

a rail member extending horizontally and affixed rigidly to a side of each drawer and terminating in a key positioned adjacent but displaced from said bar when said drawers are in said closed position; means for defining an included surface for each drawer rigidly affixed to said bar and extending downwardly toward said open front, said surfaces each being disposed to be engaged by one of said

keys when a drawer is moved from its closed position toward its open position and all other drawers are in their closed positions, said bar being moved from its first position vertically upward to its second position as said key moves along and in engagement with said inclined surface, said bar being maintained in said second position solely by said inclined surface defining means for engagement with said rail after said rail is in its second position and during the time said drawer is in other than its closed position; and

means for defining a substantially vertical surface for each drawer rigidly affixed to said bar and disposed to abut the key on a drawer when said rod is in its second position.

4,425,014

HOUSING FOR DATA ENTRY EQUIPMENT

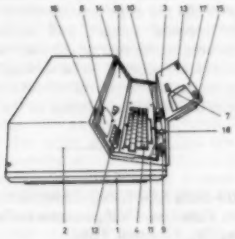
Martin Blepp, Weilen, Fed. Rep. of Germany, assignor to J. Hengstler K.G., Aldingen Kr. Tuttlingen, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,423

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 8020621[U]

Int. Cl.³ A47B *95/00*

U.S. Cl. 312—284 **15 Claims**



1. In a housing for data entry equipment having first manual control means for routine operation and second manual control means, not required for routine operation, which housing comprises a baseplate and covering means covering said baseplate while leaving said first manual control means exposed,

the improvement residing in that said covering means comprise

a first covering element, which is adapted to be opened to admit maintenance access to the entire interior of said housing, and

a second covering element pivotally coupled to said first covering element, said second covering element normally covering said second manual control means and being adapted to be opened independently of said first covering element to admit maintenance access to said second manual control means.

4,425,015

ATTACHABLE, CIRCUIT-TERMINATING, CIRCUIT BOARD EDGE MEMBER

Salvatore P. Rizzo, Foxboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 154,343, May 29, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 401,174

Int. Cl.³ H01R *13/04*

U.S. Cl. 339—17 LC **8 Claims**

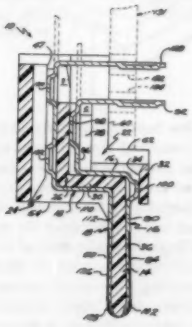
1. A circuit board edge member comprising

a generally elongated body of electrically insulative material, the body having two side walls, upper and lower portions and front and back portions, the body having inner, front and back walls, a first chamber formed between the front and inner walls and a second chamber formed between the back and inner walls, a plurality of contact element seats formed in each chamber spaced from each other in a direction extending from one end of the body to the other end,

the inner wall having a first portion lying in a first plane essentially parallel to second and third planes in which the front and back walls respectively lie and disposed intermediate the front and back walls, the inner wall having a second portion lying in a fourth plane generally perpendicular to the first three planes, a contact surface carrying tongue having a front and back surface depending from the second portion of the inner wall and extending downwardly from the body and lying in a fifth plane generally parallel to the first three planes, the second portion of the inner wall having a top and a bottom surface,

a pair of spaced, vertically extending ribs formed in each contact element seat in the second chamber,

a first contact element receivable in each contact element seat in the first chamber, each first contact element having an upper portion culminating in a circuit board contacting end, an intermediate transversely extending portion adapted to be received on the top surface of the second portion of the inner wall, and a lower portion disposed on the front surface of the tongue, the lower portion of each first contact element formed with a protrusion which is adapted to engage one of the inner and the front wall to place a bias on the lower portion of the contact element maintaining it firmly on the tongue surface, the first portion of the inner wall formed with a pair of ribs at each



contact element seat, each rib of each pair having a portion spaced from the inner wall and extending in a direction from one side of the body to the other to form a guideway adapted to receive and capture the upper portion of a contact element behind side to side direction extending ribs, each first contact element formed with a protrusion in the upper portion thereof adapted to engage one of the first portion of the inner wall and a pair of side to side direction extending ribs,

a second contact element receivable in each contact element seat in the second chamber, each second contact element having an upper portion culminating in a circuit board contacting end, the upper portion of each second contact element formed with a plurality of protrusions which are adapted to engage one of the pair of spaced ribs in the second chamber and the back wall, each second contact element having an intermediate transversely extending portion adapted to be received on the bottom surface of the second portion of the inner wall, and a lower portion disposed on the back surface of the tongue, the bottom surface of the second portion of the inner wall forming a selected angle with the back surface of the tongue, the lower portion of each second contact element prebent to form an angle with the transversely extending portion which is several degrees different from the selected angle in a direction such that when the transversely extending

portion is placed in position on the bottom surface of the second portion of the inner wall the lower portion of the second contact element is maintained firmly on the tongue surface.

4,425,016

ELECTRIC TERMINAL BOX

Lennart H. Denckert, Ekebyvägen 177, Vallentuna, Sweden S-186 00

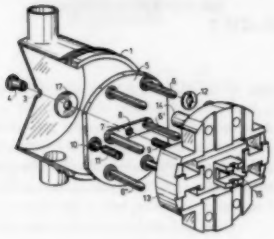
PCT No. PCT/SE81/00029, § 371 Date Sep. 17, 1981, § 102(e) Date Sep. 17, 1981, PCT Pub. No. WO81/02225, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 30, 1981, Ser. No. 305,645

Claims priority, application Sweden, Feb. 1, 1981, 8000817

Int. Cl.³ H01R *13/639, 13/514, 13/26*

U.S. Cl. 339—82 **7 Claims**



1. An electrical terminal box comprising:

a housing having an internal bottom surface, an opposing open end, and at least one opening for the insertion of an electrical wire;

a base plate rotatably mounted within said housing adjacent to its internal bottom surface;

locking means for locking said base plate in a desired angularly rotated position in relation to the housing;

a plurality of parallel connecting pins extending outward from the base plate toward the housing open end, each pin having a longitudinally extending slot adapted to receive an inserted electrical wire;

clamping locking means for locking an electrical wire after insertion into said slot; and

an outer insulating body removably mounted within the housing open end over the base plate, having tubular connecting means for snugly fitting over each of said connecting pins for establishing an electrical connection with electrical wires that are inserted in the connecting pin slots.

4,425,017

ELECTRICAL CONNECTOR INCLUDING HYDROPHOBIC GEL COMPOSITION

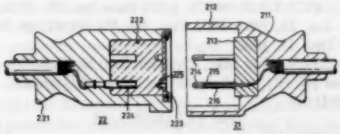
Howard K. C. Chan, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 19, 1981, Ser. No. 265,000

Claims priority, application United Kingdom, May 20, 1980, 8016577

Int. Cl.³ H01R *4/70*; H01B *3/22, 3/44*

U.S. Cl. 339—96 **4 Claims**



1. An electrical connector having a first connection element located in a chamber closed by a diaphragm which is permeable by a further connection element to mate in the chamber with a first connection element, the chamber containing an electrically insulating hydrophobic gel composition consisting of gel forming proportions of an aluminium stearate, liquid paraffin and polyisobutylene.

4,425,018

MODULAR ELECTRICAL PLUG AND SOCKET CONNECTORS

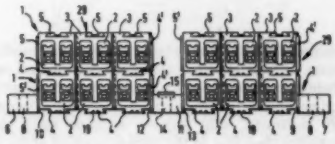
Paul P. Stenz, Detmold, Fed. Rep. of Germany, assignor to C.A. Weidmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,086

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014755

Int. Cl.³ H01R *9/26*

U.S. Cl. 339—198 GA **12 Claims**



1. An electrical connector unit adapted to be assembled with at least one further such unit to form a multi-pole electrical plug-and-socket connector block, which unit comprises

(a) an insulating housing; and

(b) electrical contact means in said housing defining a predetermined direction of making a plug-and-socket connection;

(c) said housing having a coupling region for mechanically coupling said housing to adjacent units, said housing having at least in said coupling region a rectangular cross section transverse to said predetermined direction, whereby said region has a first pair of opposite external faces and a second pair of opposite external faces, said first pair consisting of a first face provided with a first coupling groove having its longitudinal axis extending in said predetermined direction and a second face provided with a first coupling tongue having its longitudinal axis extending in said predetermined direction and adapted to couple with a said first coupling groove of an adjacent unit by relative sliding movement of said units parallel to said predetermined direction, and said second pair of faces consisting of a third face provided with a second coupling groove having its longitudinal axis extending transversely to said predetermined direction and a fourth face provided with a second coupling tongue having its longitudinal axis extending transversely to said predetermined direction and adapted to couple with a said second coupling groove of an adjacent unit by relative sliding movement of said units transversely to said predetermined direction parallel to said third and fourth faces thereof.

4,425,019

MULTIPLE ELECTRICAL CONNECTOR BLOCK WITH WIRE WRAP PINS

Karl-Heinz Pohl, Woodbury, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Jun. 8, 1981, Ser. No. 271,431

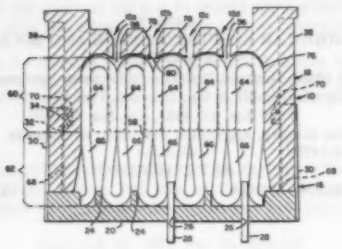
Int. Cl.³ H01R *9/24*

U.S. Cl. 339—198 R **38 Claims**

34. A multiple terminal solderless connector comprising:

a discrete number of interconnected loops, said loops being formed from a continuous piece of conductive resilient material, said loops being arranged in a co-planar relation-

ship between two end loops, said loops each having two straight parallel side portions interconnected by a curved portion, the straight side portions of adjacent of said loops being in abutting relationship, at least all of those loops intermediate the end loops being provided with a pair of extensions of said straight side portions, said extensions



being nonparallel and converging toward one another, said extensions of said abutting side portions of said adjacent loops being interconnected by an arcuate section, said interconnecting arcuate sections of said adjacent loops being spatially separated, said arcuate sections each having a smaller radius than that of the curved portion of the loops it interconnects.

4,425,020

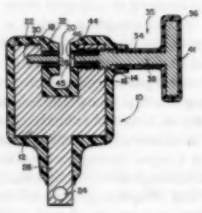
CLAMP FOR AN ELECTROPLATING RACK

Joseph C. Wismer, 10 Sussex Rd., Bergenfield, N.J. 07621

Filed Jun. 24, 1982, Ser. No. 391,856

Int. Cl.³ H01R *4/36*

U.S. Cl. 339—264 R **20 Claims**



1. A clamp for securing and electrically connecting an object to be electroplated to an electroplating rack for immersion in an electroplating solution, electrical contact being made between the rack and the object, said clamp comprising:

(a) a frame including a core of conductive material and a sheath of insulating material covering the core, said core being connectable to the rack for connecting the frame to a source of electrical current;

(b) an opening in the frame having a threaded electrically conductive portion extending through a portion of the core, and having at least one unthreaded electrically insulating end portion;

(c) a clamp screw having an actuating head, a clamp face, and a threaded central electrically conductive shank portion intermediate the clamp face and actuating head and spaced therefrom, the threaded electrically conductive shank portion being adapted to engage the threaded electrically conductive core portion of said frame opening, said screw having at least one shank portion contiguous with and flanking said central shank portion which is unthreaded, said at least one unthreaded shank portion and said at least one unthreaded end portion of the frame opening facing each other and being dimensioned for a surface-to-surface substantially liquid-tight interference fit, to provide therebetween a relatively liquid-tight seal, the clamp face including a conductive face portion for contacting the item to be electroplated, the conductive face portion being conductively interconnected with the threaded shank portion; and

(d) clamping pad means on the frame opposite the clamp face to said clamp screw for enabling the item to be electrically engaged and clamped between the clamp screw and said clamping means.

4,425,021

GLASS MOUNTED ELECTRICAL TERMINAL

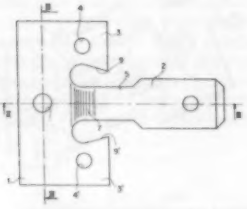
Muzio Nicolino, Vasto, Italy, assignor to Societa Italiana Vetro Siv S.p.A., Vasto, Italy

Filed Jul. 21, 1981, Ser. No. 285,651

Claims priority, application Italy, Jul. 31, 1980, 49388 A/80

Int. Cl.³ H01R *4/02, 4/10*

U.S. Cl. 339—275 T **4 Claims**



1. An electrical connection device for electrically heated glass sheets, including a plate element of symmetric shape with respect to a geometric axis of symmetry having a hole centered on said axis and a tail element integral with said plate element and protruding sideways from it in the direction of said axis of symmetry of said plate element, said tail element being staggered with respect to the general plane of the plate element, through a step area, said device being characterised in that a portion of said tail element positioned between said step area and the free end of said tail element, has a transversal cross section reduced with respect to the whole transversal cross section of the rest of said tail element and said plate element has two additional holes symmetrically positioned with respect to said axis of symmetry and two recesses symmetrically positioned with respect to said axis of symmetry, having one side converging towards said axis and one rounded profile which merges into said step area of said tail element, the centers of said additional holes, the centers of curvature of said rounded profiles of said recesses and said step area being substantially aligned on a line perpendicular to said axis of symmetry, and said plate element being slightly arched with respect to its general plane so as to be at a slight distance from said general plane in its area corresponding to said axis of symmetry.

4,425,022

ANTIREFLECTION COATING ON A SURFACE WITH HIGH REFLECTING POWER

Roland Ludwig, Bischoffen, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

PCT No. PCT/DE80/00031, § 371 Date Jan. 25, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. WO80/02749, PCT Pub. Date Dec. 11, 1980

PCT Filed Mar. 17, 1980, Ser. No. 229,575

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921178

Int. Cl.³ G02B *5/28*

U.S. Cl. 350—1.7 **12 Claims**

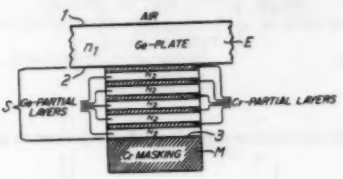
1. An anti-reflection construction, comprising:

an incidence layer of an incidence medium having a refractive

index n_1 greater than about 1.3 and having a front (incidence) surface and a rear surface;

a reflecting layer of highly reflecting material positioned behind the rear surface of said incidence layer;

a reflection-reducing layer positioned between said incidence layer and said reflecting layer, said reflection-reducing layer comprising first and second components, wherein said first component comprises an absorption-free material having an



index of refraction n_2 which is equal to or approximately equal to n_1, wherein said second component comprises a strongly absorbing material, and wherein said reflection-reducing layer has a thickness such that the $\lambda_0/4$ condition is satisfied, and wherein the relative amounts of said first and second components is selected such that substantially no reflection is produced at the interface between said reflecting layer and said reflection-reducing layer.

4,425,023

BEAM SPOT SCANNING DEVICE

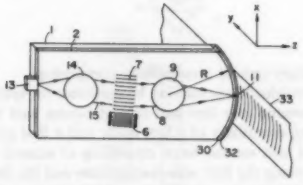
Kazuya Matsumoto, Yokohama; Isao Yamaguchi, Tokyo; Takao Tsuji, Kawasaki, and Hideaki Sato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,744

Claims priority, application Japan, Jan. 31, 1980, 55-12939; Feb. 1, 1980, 55-11337; Feb. 9, 1980, 55-14989

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.14 **11 Claims**



1. A device for reproducing information on a recorded medium comprising:

a wave guide for propagating a light beam;

a magnetic transfer film provided on a light exit surface of said wave guide;

first means for deflecting said light beam in said wave guide;

second means for concentrating the deflected light beam on or near said magnetic transfer film; and

third means for detecting the light beam from said magnetic transfer film.

4,425,024

PLANAR ELECTRO-OPTICAL LIGHT DEFLECTOR FOR SEVERAL BEAM POSITIONS

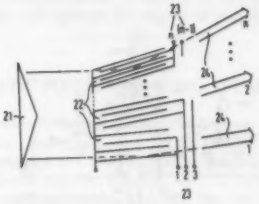
Rudolf Keil, Munich, and Franz Auracher, Baierbrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 29, 1981, Ser. No. 268,337

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025083

Int. Cl.³ G02B 5/174

U.S. Cl. 350—96.14 **10 Claims**



1. A planar electro-optical light deflector for deflecting an incident light beam to a plurality of beam positions, comprising:

an optical layer waveguide for receiving an incident light beam; and

a plurality of separately activatable electrode structures on said waveguide for producing deflection grids, said electrode structures being adjacently-disposed across the direction of beam incidence,

said electrode structures having respective different grid constants and disposed at respective inclinations on said waveguide so that the incident light beam impinges at the respective Bragg angles,

whereby said layer waveguide is capable of receiving incident light over a width which corresponds to that of the totality of said plurality of electrode structures.

4,425,025

OPTICAL SYSTEM FOR ENDOSCOPES

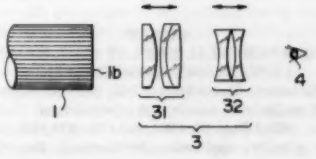
Yasumasa Sunaga, Iwatsuki, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Dec. 17, 1980, Ser. No. 217,556

Claims priority, application Japan, Dec. 26, 1979, 54-169587

Int. Cl.³ G02B 5/17

U.S. Cl. 350—96.26 **2 Claims**



1. An optical system for an endoscope, comprising: a flexible image guide optical fiber bundle having an entrance face at one end thereof and an exit face at the other end thereof, a wide angle objective adjacent said entrance face for focusing an image to be observed on said entrance face, a variable focal length eyepiece lens system located adjacent said exit face for viewing an image appearing on said exit face, said variable focal length eyepiece lens system comprising a positive lens group, and a negative lens group, said positive lens group being axially movable to vary the distance thereof from said exit face of said optical fiber bundle, and said negative lens group being

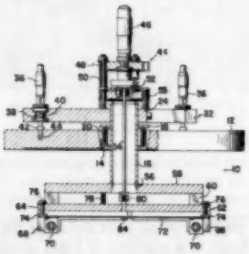
axially movable to vary the distance between the same and the positive lens group.

4,425,026

REFOCUSING MIRROR MANIPULATOR

Neil C. Lien, Evansville, Wis., assignor to Baker Manufacturing Company, Evansville, Wis.

Filed Jun. 19, 1981, Ser. No. 275,287
Int. Cl.³ G02B 5/10
U.S. Cl. 350—295 9 Claims



1. A manipulator for adjusting the curvature of a bendable mirror (72), positioned inside of a high-vacuum optical apparatus, comprising:

a mounting plate (12) adapted for attachment to the optical apparatus to serve as a portion of the vacuum containment thereof;

a manually adjustable micrometer (46) positioned on the exterior of the mounting plate (12);

a single feedthrough shaft (54) attached to and operable by the micrometer (46), the feedthrough shaft (54) extending through the mounting plate (12);

a saddle member (82) secured to the feedthrough shaft (54) on the interior side of the mounting plate (12); and

a pair of drawbridge members (62, 64) rotatably mounted on the interior of the mounting plate (12), each of the drawbridge members (62, 64) secured to a respective end of the mirror (72) at one of its ends and resting on the saddle member (82) at the other of its ends so that vertical movements of the saddle member (82) cause rotational movements of the drawbridge members (62, 64) to thereby adjust the curvature of the mirror (72).

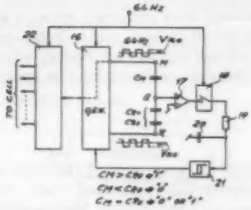
4,425,027

LIQUID CRYSTAL DISPLAY CELL HAVING CAPACITANCE COMPENSATION

Hubert Portmann, Stationstrasse 16b, 6023 Rothenburg, Switzerland, assignor to Asulab, S.A., Switzerland

Filed Dec. 14, 1981, Ser. No. 330,187
Claims priority, application Switzerland, Dec. 19, 1980, 9387/80
Int. Cl.³ G09G 3/36
U.S. Cl. 350—331 T 3 Claims

1. A liquid crystal display cell comprising a liquid crystal between a first and a second plate, at least one control electrode and counter-electrode disposed each on one of the plates, a measuring capacitor comprised of two electrodes disposed each on one of the plates, the capacitance of the measuring capacitor being temperature dependent when said measuring capacitor is submitted to a voltage in the range of the threshold voltage of the liquid crystal, and a reference capacitor formed by a plurality of series connected constituent capacitors comprised each of two electrodes disposed each on one of the plates, the capacitance of the reference capacitor being substantially temperature-dependent when submitted to said voltage.

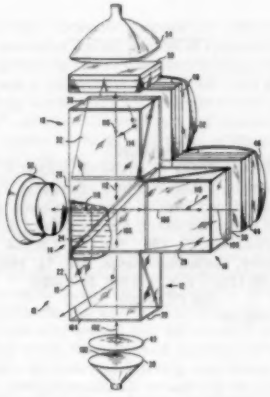


4,425,028

HIGH EFFICIENCY OPTICAL TANK FOR THREE COLOR LIQUID CRYSTAL LIGHT VALVE IMAGE PROJECTION WITH COLOR SELECTIVE PREPOLARIZATION AND SINGLE PROJECTION LENS

Ralph J. Gagnon, Chico, and Robert T. Carson, Fullerton, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 334,682
Int. Cl.³ G02F 1/13
U.S. Cl. 350—337 4 Claims



1. A unitary optical arrangement comprising:

a first color selective polarizing beamsplitter for splitting light from a source into first and second beams, said first beam consisting essentially of a first color and a first polarization state and said second beam consisting of second and third colors having the first polarization state and the first second and third colors having the second polarization state;

a second color selective polarizing beamsplitter for splitting said second beam into said third and fourth beams, said third beam consisting of essentially light of the first polarization state and said fourth beam consisting essentially of light of the second and third colors and the second polarization state;

a first dichroic separator for filtering said third beam, extracting said first color component and directing it to said first light valve; and

a second dichroic separator for filtering said fourth beam and directing said second color component to said second light

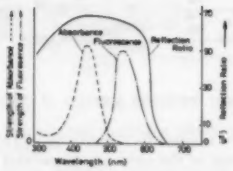
valve and directing said third color component to said third light valve.

4,425,029

FLUORESCENT LIQUID CRYSTAL DISPLAY DEVICES

Fumiaki Funada, Yamatokoriyama; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,190
Claims priority, application Japan, Mar. 26, 1980, 55-39520
Int. Cl.³ G02F 1/13
U.S. Cl. 350—338 4 Claims



1. A fluorescent liquid crystal display of the type for reflecting radiation comprising:

a fluorescent material contained within a liquid crystal material for providing fluorescence in response to absorbance, the wavelength band of the fluorescence being apart from that of the absorbance absorbed by the fluorescent material; and

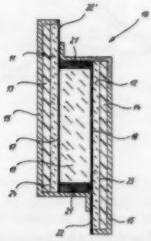
filter means for reflecting the absorbance and the fluorescence to enhance display contrast of the fluorescent liquid crystal display.

4,425,030

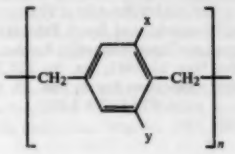
LIQUID CRYSTAL DISPLAY COMPRISING AN ENCAPSULATION AND A LIQUID CRYSTAL DISPLAY CELL WITH POLY-PARA-XYLENE AND A METHOD OF MANUFACTURING THE SAME

Walter Schmidt, Zärich, Switzerland, assignor to Contraves AG, Zürich, Switzerland

Filed Mar. 9, 1981, Ser. No. 241,937
Claims priority, application Switzerland, Mar. 28, 1980, 2451/80
Int. Cl.³ G02F 1/133
U.S. Cl. 350—339 R 8 Claims



1. A liquid crystal display comprising two substantially plane parallel transparent substrates, two polarizer foils applied to external faces of the substrates, marginal seal means connecting said substrates to define a space therebetween, and a liquid crystal material enclosed within said space between said substrates and said marginal seal means, and an encapsulation comprising a polymerizate of the general formula:



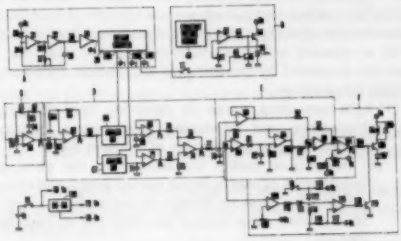
wherein each X and Y are substituents independently selected from the group consisting of chlorine and hydrogen, and n designates the degree of polymerization.

4,425,031

AUTOMATIC FOCUS ADJUSTING APPARATUS FOR CAMERA

Shuichi Tamura, Yokohama; Masahiko Ogawa, Hino; Tokuichi Tsunekawa, Yokohama, and Ryuji Tokuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 032,791, Apr. 17, 1979, abandoned.
This application May 21, 1981, Ser. No. 265,806
Claims priority, application Japan, Apr. 23, 1978, 53-48006
Int. Cl.³ G03B 3/00; G01J 1/46
U.S. Cl. 354—403 31 Claims



1. An automatic focus adjusting apparatus for a camera having a photographic lens, comprising:

(a) a light projecting means for illuminating an object to be photographed;

(b) a reflected light detecting means for producing an electrical signal corresponding to light reflected on an object to be photographed;

(c) a peak detecting means for detecting a peak value of the electrical signal from the detecting means;

(d) a first control means for producing a stop signal for stopping movement of the photographic lens in accordance with the output of the peak detecting means;

(e) a stop means for stopping movement of the photographic lens in response to the output of the control means;

(f) a comparison means connected to the light detecting means to compare the level of the electrical signal from the light detecting means with the level of a preset noise signal and produce a first control signal when the level of the electrical signal from the light detecting means is higher than that of the noise signal;

(g) a predetermined distance detecting means operatively associated with the photographic lens to produce a second control signal when the photographic lens is moved to a given position corresponding to a distance at which the peak value of the electrical signal from the light detecting means cannot be detected by the peak detecting means; and

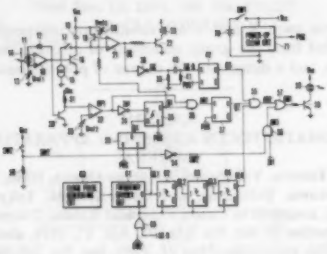
(h) a second control means operatively connected to the stop means for stopping the movement of the photgraphic lens when the first and the second control signals are produced.

4,425,032

CAMERAS AND CIRCUITS FOR SENSING THE ACTION OF CAMERA SHUTTERS

Ryoichi Suzuki, Kawasaki, and Ryuji Tokuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1981, Ser. No. 321,208
Claims priority, application Japan, Nov. 18, 1980, 55-162151
Int. Cl.³ G03B 7/097
U.S. Cl. 354—458 8 Claims



1. A shutter action discrimination circuit for a camera having a sub-aperture which is arranged to be set in a pre-opened state with a prescribed opening when shutter members are at an initial position and a main aperture is closed, and is closed from the pre-open state and gradually opened in an association with an opening action of the main aperture when the main aperture is opened by the action of said shutter members, said circuit comprising:

(1) light measuring means for receiving light through said sub-aperture and producing photometric information corresponding to the amount of incident light;

(b) comparison means for comparing the photometric information of said light measuring means and reference information so as to change its output from a first state to a second state during the time the sub-aperture is closed;

(c) first timer means for initiating a time counting action corresponding to the time to start the action of the shutter members and for producing a prescribed signal timed to indicate that the sub-aperture is closed from the pre-open state when the shutter members function properly; and

(d) discriminating means for discerning the action of the shutter members by detecting an output state of the comparison means when the signal is produced by the first timer means.

4,425,033

CAMERA EMPLOYING A FLASH ILLUMINATION DEVICE AND A FLASH PHOTOGRAPHING SYSTEM

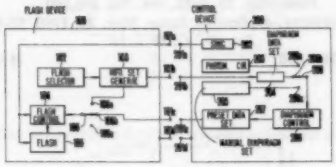
Yukio Iura, Yokosuka; Masayoshi Yamamichi; Takashi Uchiyama, both of Yokohama; Tetsuya Taguchi, Kanagawa, and Yukio Mashino, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 4,885, Jan. 19, 1979, abandoned, which is a continuation of Ser. No. 731,225, Oct. 12, 1976, abandoned, which is a continuation of Ser. No. 563,446, Mar. 31, 1972, abandoned. This application Jul. 8, 1982, Ser. No. 396,429
Claims priority, application Japan, Apr. 1, 1974, 49-36793; Apr. 1, 1974, 49-36794
Int. Cl.³ G03B 7/085, 15/05
U.S. Cl. 354—423 33 Claims

1. For a flash device having a light control circuit for stopping a flash to obtain an amount of light emitted by a flash means corresponding to the distance to an object and a signal forming means which forms a signal corresponding to an aperture value required for proper exposure when using flash photography with said light control circuit;

a camera usable with an interchangeable lens with a maximum diaphragm aperture comprising:

diaphragm control means including electrical circuit means and a photometric element couplable to said electrical circuit means for receiving light passing through the maximum aperture of the interchangeable lens, and correcting means in said electrical means for correcting variations in the measurements of the photometric element as a result of



the particular maximum aperture of the interchangeable lens,

selector means adapted for connecting said electrical circuit means to one of the photometric element and the signal forming means in dependence upon whether the flash is to be used,

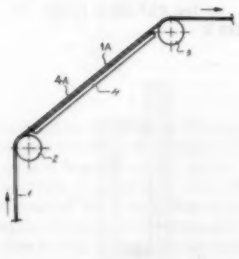
switching means couplable to said correcting means for substantially removing the correction of the correcting means during flash photography.

4,425,034

SYSTEM FOR SUPPRESSING VIBRATIONS OF A PHOTOCONDUCTIVE BELT IN A PROCESSING ZONE OF AN ELECTROSTATIC COPYING MACHINE

Sake P. Roodbergen, Tegelen, Netherlands, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Jan. 22, 1982, Ser. No. 347,040
Claims priority, application Netherlands, Feb. 18, 1981, 8100782
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 BE 4 Claims

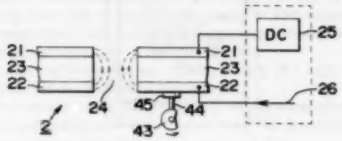


1. In an electrostatic copying machine comprising a photoconductive belt movable through a processing zone in which a flight of the belt is held flat by tension between belt guiding members arranged at opposite sides of said zone, means for suppressing vibrations in said belt flight comprising a rigid plate having a closed flat surface corresponding substantially in dimensions to the dimension of said processing zone and disposed parallel to said belt flight at a distance therefrom sufficiently small that vibrations in the belt being moved through said zone are suppressed.

4,425,035
IMAGE REPRODUCING APPARATUS

Noriyoshi Tarumi, Hachioji; Haruo Iwahashi, Fussa; Masahiko Matsunawa, and Hiroshi Tokunaga, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 268,795
Claims priority, application Japan, Jun. 11, 1980, 55/82173[U]
Int. Cl.³ G03G 15/02; H01T 19/04
U.S. Cl. 355—3 CH 8 Claims

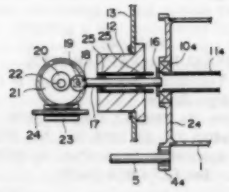


1. An image reproducing apparatus which comprises;
a charge generator,
an ion modulating electrode having at least a row of apertures for modulating ion flow generated by said charge generator,
a charge receptor for reproducing an electrostatic image by the modulated ion flow, and
a means for imparting oscillation to said ion modulating electrode.

4,425,036
APPARATUS FOR DRIVING A PHOTOSENSITIVE MEDIUM

Toru Kameyama, Tokyo, and Junji Ichikawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1982, Ser. No. 398,829
Claims priority, application Japan, Jul. 24, 1981, 56-115995
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 DR 7 Claims

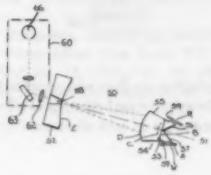


1. A photosensitive medium driving apparatus comprising:
a photosensitive medium rotatable in the circumferential direction;
a driving source for rotating said photosensitive medium in the circumferential direction at a uniform peripheral speed;
a supporting member for supporting said photosensitive medium for movement in the axial direction of said medium; and
means for continuously moving said photosensitive medium in the axial direction in relation to the rotation of said medium.

4,425,037
APPARATUS FOR PROJECTING A SERIES OF IMAGES ONTO DIES OF A SEMICONDUCTOR WAFER

Ronald S. Hershel, Albany, Oreg., and Martin E. Lee, Saratoga, Calif., assignors to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 264,171, May 15, 1981, abandoned, and a continuation-in-part of Ser. No. 264,249, May 15, 1981, abandoned. This application May 14, 1982, Ser. No. 378,370
Int. Cl.³ G03B 27/52, 27/70
U.S. Cl. 355—43 15 Claims



1. An apparatus for use in a microlithography system to align a semiconductor wafer having a plurality of dies, and fiducial marks, with the projected image of at least one pattern having further fiducial marks, said apparatus comprising:
means for directing a beam of light toward a reticle;
shutter means having an aperature for permitting a fraction of said beam to illuminate the fiducial marks of the reticle pattern;
a projection lens comprising:
a spherical concave mirror having an aperature on its optical axis,
a meniscus lens having a first convex surface facing said mirror and a concave surface facing away from said mirror,
a plano-convex lens having a second convex surface facing said concave surface and a first flat surface facing away from said mirror,
and first and second prisms for coupling light into and from separate fields on said first flat surface, each of said prisms having a second flat surface facing one of the image and object planes of said projection lens, said image and object planes being spaced from said second flat surfaces, whereby said fraction of said beam passes through a reticle positioned at the object plane to illuminate a wafer positioned at the image plane;
means for moving a wafer in said image plane to align the projected image of the fiducial marks of the reticle patterns with the further fiducial marks of a die on said wafer; and
means for detecting light scattered through said aperature of said mirror to determine coincidence of the wafer and image fiducial marks.

4,425,038
TECHNIQUE TO MODIFY WAFER GEOMETRY

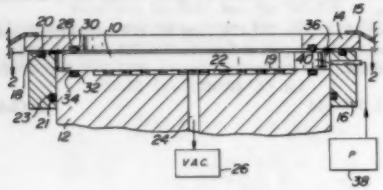
Carlo F. La Fiandra, New Canaan, and Burke E. Nelson, West Redding, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 19, 1981, Ser. No. 312,488
Int. Cl.³ G03B 27/60
U.S. Cl. 355—73 9 Claims

1. In a photolithographic system apparatus for producing controlled geometry change in a thin circular element,
an adapter ring,
a movable platen supporting said circular element and biased to urge said element against said adapter ring,
vacuum means in said platen for securing said element to said platen,
a platen carrier fixed to said platen for guiding said platen,

the edge of said element, said adapter ring, said platen and said platen carrier forming a chamber,

means for sealing said chamber making it airtight,



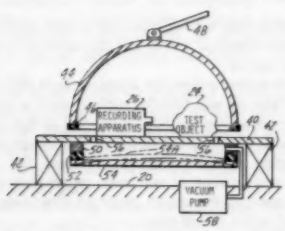
means for introducing air into said chamber to apply pressure against the edge of said element in all radial directions to cause deformation of said element.

4,425,039

APPARATUS FOR THE PRACTICE OF DOUBLE EXPOSURE INTERFEROMETRIC NON-DESTRUCTIVE TESTING

Ralph M. Grant, Rochester, Mich., assignor to Industrial Holographics, Inc., Auburn Heights, Mich.

Filed May 7, 1982, Ser. No. 375,851
Int. Cl.³ G01B 9/025
U.S. Cl. 356—35.5 **8 Claims**



1. A pressure chamber useful for performing double exposure interferometric analysis of a test object surface before and after a pressure change, comprising:

a base plate having a horizontal extension and operative to support said test object and an apparatus for peforming the interferometric analysis;

means operative to support the base plate relative to a rigid mounting surface;

a pressure dome having a free edge configured so as to be supported in contact with the base plate to enclose an area above the base plate;

means located beneath the base plate for defining an enclosed manifold volume substantially coextensive with the area of the base plate surrounded by the pressure dome;

means for modifying the pressure within the volume defined by the base plate and the pressure dome; and

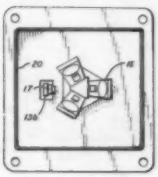
means for maintaining pressure in the manifold volume in equilibrium with the pressure within the volume defined by the top of the base plate and the pressure dome, whereby the pressure on opposed sides of the base plate is maintained substantially equal, independent of changes in pressure within the pressure dome.

4,425,040

RING LASER GYROSCOPE CLUSTER FOR STRAPPED DOWN NAVIGATION

Bo H. G. Ljung, Wayne, N.J., and George R. Gamertsfelder, Pleasantville, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Jan. 29, 1981, Ser. No. 229,618
Int. Cl.³ G01C 19/64
U.S. Cl. 356—350 **5 Claims**



1. A ring laser gyroscope cluster for strapped down navigation comprising:

a stable element having a dither axis;

a common support structure having an axis of symmetry coaxial with the dither axis and having a rotationally symmetrical inner surface and having an outer surface adapted for orthogonally mounting first, second and third ring laser gyroscopes;

first, second and third ring laser gyroscopes mounted to the outside of said support structure and peripherally spaced around the dither axis;

first spring means mounting said common support structure to said stable element in a resilient manner and symmetrically disposed about the dither axis; and

electromechanical transducer means for dithering said common support structure relative to said stable element,

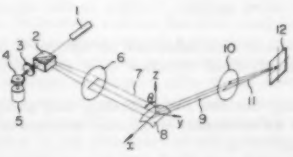
wherein said first, second and third gyroscopes have respectively first, second and third gyroscope axes of symmetry, said three gyroscope axes being peripherally spaced 120 degrees apart, and said three gyroscope axes being arranged to intersect the dither axis at a gyroscope common intersection point disposed axially outwardly of the common support structure, and said three gyroscope axes being disposed at the same angle to the dither axis, for rendering said ring laser gyroscopes insensitive to the differential thermal air currents, and for increasing the sensitivity of the combined output of the ring laser gyroscope cluster, and for ease of manufacture and overhaul of the ring laser gyroscope cluster.

4,425,041

MEASURING APPARATUS

Keizo Nishiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 969,882, Dec. 15, 1978, abandoned.
This application Jul. 13, 1981, Ser. No. 283,098
Claims priority, application Japan, Dec. 16, 1977, 52-152061
Int. Cl.³ G01B 11/30
U.S. Cl. 365—371 **1 Claim**



1. A flatness measuring apparatus for measuring a one di-

mensional profile of a roughened surface by detecting the absolute angular deviation of regularly reflected light beams from said surface in a scanning direction on a position detecting photoelectric element and making an electric integration of the output of said photoelectric element, comprising:

means for generating a light beam;

optical means for scanning the light beam across the roughened surface along a scanning line;

a first collimator lens provided between said optical means and the roughened surface for collimating the light beam, said first collimator lens being positioned such that for any point along the scanning line, the collimated beam is projected to the scanning line in a plane normal to the scanning line and at an oblique angle to the normal of the roughened surface, thereby increasing the amount of light reflected from the roughened surface,

a second collimator lens to concentrate the light reflected from the roughened surface; and

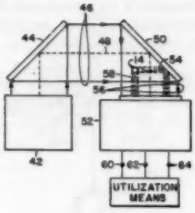
a photoelectric element positioned at the focal plane of said second collimator lens for detecting the deviation component in the direction of the scanning line.

4,425,042

POSITIONING MEASURING APPARATUS AND METHOD

Rex L. Smith, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,317
Int. Cl.³ G01B *11/00, 11/14, 11/08*
U.S. Cl. 356—375 **6 Claims**



1. An apparatus for detecting the position of an article comprising:

a camera having a linear photodiode array, a source of clock pulses, means responsive to said clock pulses for scanning said array to produce video data output pulses indicative of shadows in a light beam impinging upon said array, and means for producing an end of scan pulse,

means for directing a first collimated light beam onto said article so that said first beam having a first shadow of said article impinges upon a first portion of said photodiode array,

means for directing a second collimated light beam onto said article so that said second beam having a second shadow of said article impinges upon a second portion of said photodiode array, the positions of said first and second shadows on said array being indicative of the position of said article in first and second directions, respectively,

first and second pulse counter circuits,

first and second gate means having an input terminal connected to said source of clock pulses,

third gate means connecting the output of said first gate means to said first counter,

fourth gate means connecting the output of said second gate means to said second counter,

a first flip-flop having first and second complimentary output terminals connected to said first and second gate means, respectively, for alternately enabling said first and second gate means,

a second flip-flop having first and second complimentary output terminals connected to said third and fourth gate means, respectively, for alternately enabling said third and fourth gate means,

a pulse train divider circuit, the output of which is connected to an input of said second flip-flop,

means connecting said end of scan pulse to the reset inputs of said first and second flip-flops, said divider and said first and second pulse counter circuits, and

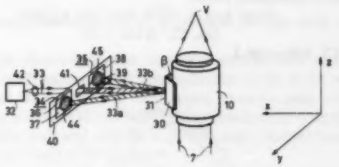
means connecting said video output data pulses to said first flip-flop.

4,425,043

DEVICE FOR DETECTING THE POSITION OF AN OBJECT

Gerard E. van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,626
Claims priority, application Netherlands, Apr. 3, 1981, 810669
Int. Cl.³ G01B *11/14*
U.S. Cl. 356—375 **7 Claims**



1. An apparatus for measuring the position of an object relative to a coordinate system, comprising:

a. a beam-splitting device mounted on the object and including a beam receiving edge defined by two inclined surfaces, said device being adapted for splitting a beam of radiation incident to said edge into first and second beams directed away from said object;

b. a radiation source, remote from the object, for directing a beam of radiation toward the edge of the beam splitting device;

c. first and second radiation sensitive detectors, remote from the object, for receiving the first and second beams and producing electrical signals representing the intensities of said beams, said detectors each including at least two subdetectors separated by a line having a predefined orientation relative to the edge; and

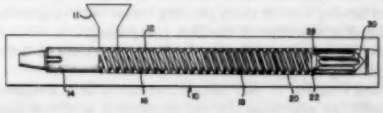
d. circuitry coupled to the detectors for summing said signals and producing position signals representing a linear position and an angular position of the object relative to the coordinate system.

4,425,044

MIXER HEADS FOR POLYOLEFIN EXTRUDERS

Stuart J. Kurtz, Martinsville; Leonard S. Scarola, Union, and John C. Miller, Piscataway, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 21, 1981, Ser. No. 313,626
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—79 **4 Claims**



1. An apparatus for the mixing of linear polyolefin materials having high viscosity comprising a cylindrical extruder barrel having an inner wall, a single-screw extruder employing a

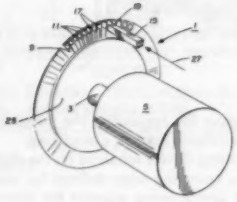
mixing head within said barrel, said mixing head having mixing barriers, wiping barriers, and a plurality of longitudinal mixing channels which alternate with said mixing barriers and wiping barriers, said mixing head having outer circumferential surfaces of a diameter substantially equal to that of said inner wall of said extruder barrel, each said wiping barrier having an outer surface with an opened bevelled leading edge portion adjacent to a respective mixing channel and a longitudinal radially-stepped region on said opened bevelled leading edge portion which acts as a hydrodynamic wedge to the passage of polyolefin material passing between said outer surface and said inner wall of said extruder barrel; and both said radially-stepped, opened bevelled, leading edge portions and said outer circumferential surfaces supporting an outer coating of gall-resistant material.

4,425,045

PRINT WHEEL FOR USE WITH AN ALIGNMENT PRINT HAMMER

Richard G. Crystal, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1979, Ser. No. 62,609
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **1 Claim**



1. A print wheel for use with an alignment print hammer, said print wheel comprising beams extending radially outward from a hub, said beams having print heads attached thereto, said print heads having a print character on one face thereof and an alignment surface on the surface of said print head opposite said print character to contact an alignment surface of said alignment print hammer characterized in that a flexible beam retarding means is located in spaced apart planar relationship parallel to the plane formed by the radially extending beams and positioned to be contacted by a beam after said beam has been acted on by said print hammer and to be out of contact with said beams when said beams are not being acted on by said alignment print hammer.

4,425,046

RIBBON CASSETTE AND SENSOR ASSEMBLY

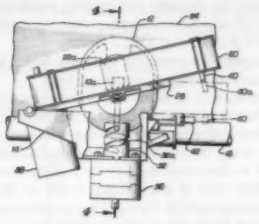
Arthur C. Van Horne, Lake Oswego, Oreg., and Terry L. Branson, Dripping Springs, Tex., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 189,122, Sep. 22, 1980, abandoned. This application Oct. 12, 1982, Ser. No. 433,738
Int. Cl.³ B41J *35/14, 35/20, 32/00*
U.S. Cl. 400—208 **12 Claims**

1. A multiposition ribbon cassette system for positioning a ribbon having two or more printing bands with respect to the printhead of a printer or the like, comprising:

a shuttle which is adapted to carry a printhead across a printing medium; and

means, coupled to said shuttle and movable in conjunction with the printhead, for (a) supporting a ribbon cassette having a ribbon therein, said ribbon cassette carrying a portion of said ribbon in a plane parallel to the printing medium, and (b) shifting said ribbon cassette to a plurality of fixed positions to shift the entire ribbon cassette so as to change the vertical position of the ribbon cassette with respect to the printhead to position a different print band



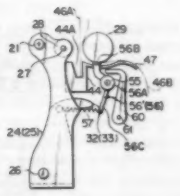
adjacent head while maintaining the ribbon parallel to and a constant distance from the printing medium.

4,425,047

PRINTING MACHINE CAPABLE OF PRINTING CHARACTERS ON LONG AND SHORT PAPER SHEETS

Tsugio Narushima, Mishima, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 297,822
Claims priority, application Japan, Sep. 11, 1980, 55-126336; Sep. 11, 1980, 55-126337; Sep. 11, 1980, 55-126338
Int. Cl.³ B41J *11/48*
U.S. Cl. 400—605 **10 Claims**



1. A printing machine of the type capable of printing characters on two kinds of paper sheets, a long paper sheet and a short paper sheet comprising:

a paper feed roller having a stationary axis and being rotatable about said stationary axis;

a pinch roller having an axis which is movable toward and away from said paper feed roller, said pinch roller being rotatable about the movable axis;

printing means for printing characters on at least one of said long paper sheet and short paper sheet, said printing means including a platen fixed in parallel with said paper feed roller, and a printing head movable toward and away from said platen and in parallel with said platen, said printing head being spaced from said platen;

at least one paper holder member movably provided relative to said paper feed roller and urged to cause said long paper sheet to be clamped between said at least one paper holder member and the paper feed roller;

movable support means for rotatably supporting said pinch roller and for movably supporting said printing head, said movable support means being rotatably arranged about an axis disposed parallel to said pinch roller so that said printing head and said pinch roller are integrally moved relative to said platen and said paper feed roller, said movable support means including an abutting portion engageable with said paper holder member to move said paper holder member away from said paper feed roller, thereby causing said long paper sheet to be unclamped when at least one of said long paper sheet and short paper sheet is clamped between said paper feed roller and said

pinch roller, and which is disengageable from said paper holder member to clamp said long paper sheet between said paper feed roller and said paper holder member when said pinch roller is moved away from at least one of said long paper sheet and short paper sheet to release same;

first drive means coupled to said movable support means for selectively moving said movable support means in one direction to clamp at least one of said long paper sheet and short paper sheet between said pinch roller and said paper feed roller and to unclamp said long paper sheet clamped between said paper holder member and said paper feed roller, and for selectively moving said movable support means in another direction to unclamp said at least one of said long paper sheet and short paper sheet clamped between said pinch roller and said paper feed roller and to clamp said long paper sheet between said paper holder member and said paper feed roller; and

second drive means coupled to said paper feed roller for rotating said paper feed roller to feed at least one of said long paper sheet and short paper sheet clamped between said paper feed roller and said pinch roller toward a space between said printing head and said platen.

4,425,048

JOINT FOR FRAMEWORK STRUCTURE

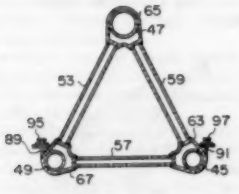
Hideaki Kamohara, Ibaraki; Minoru Imamura, Yamaguchi; Hiroshi Higaki, Kudamatsu; Yuji Yoshitomi, Ibaraki; Syuzo Uno; Kazuhiro Makino, both of Kudamatsu, and Hiroshi Nomura, Hikari, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

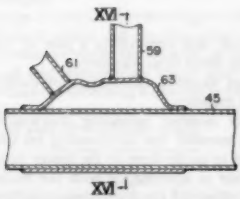
Filed Apr. 17, 1981, Ser. No. 255,101

Claims priority, application Japan, Apr. 18, 1980, 55-50386

Int. Cl.³ F16B *7/08;* **F16L** *41/00*

U.S. Cl. 403—191 **11 Claims**





1. A joint, for connecting a main pipe with at least one auxiliary pipe, comprising an at least substantially semicylindrical member having at least partially cylindrical, unexpanded end portions for fitting around a cylindrical main pipe, and a middle portion which is radially expanded relative to said end portions and has transitional surface portions producing a gradual raising of said expanded portion from said end portions, and at least one auxiliary pipe mounting portion protruding from the expanded middle portion.

4,425,049

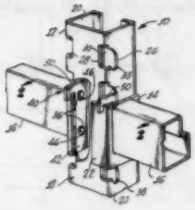
JOINING ASSEMBLY WITH LOCKING MEANS FOR ADJUSTABLE STORAGE RACKS

Merton A. Travis, Shingle Springs, Calif., assignor to Travis Handling Systems, Inc., Shingle Springs, Calif.

Filed Mar. 27, 1981, Ser. No. 248,058

Int. Cl.³ F16B *9/02*

U.S. Cl. 403—237 **8 Claims**



1. A joining assembly for an adjustable storage rack, comprising:

an upright channel member having a vertical front wall and a side wall substantially perpendicular to the front wall;

a bracket from which a load beam extends, said bracket having a vertical front wall and a substantially perpendicular side wall and shaped such that said channel member and said bracket fit together;

connecting means for connecting said channel member with said bracket, said connecting means comprising a slot formed in a wall of said channel member, said slot including an enlarged portal in an upper portion of the slot and a smaller seat portion in a lower portion of the slot, and an inwardly directed pin on an inside wall of the bracket, said pin having a head larger than said lower portion of the slot and smaller than said portal, so that said pin can move through said portal and engage said seat portion, to fully connect said bracket with said channel member; and

locking means larger than said portal and including a slot with a lower entry portion larger than the pin head and an upper seat portion smaller than the pin head, said locking means being engageable with the pin when said bracket and channel member are fully connected, whereby the pin is restricted from moving through the portal, preventing disengagement of said connection means, and said locking means further including a finger which projects through the portal when said locking means is engaged on said pin.

4,425,050

FLUID-PRESSURE ACTUATED COUPLING

Francois Durand, 11, rue du Bateau, 06600 Antibes, France

Filed Dec. 10, 1981, Ser. No. 329,512

Claims priority, application France, Dec. 11, 1980, 80 26614; Feb. 3, 1981, 81 02616; Oct. 6, 1981, 81 18993

Int. Cl.³ F16D *1/00;* **F16L** *17/00, 29/00*

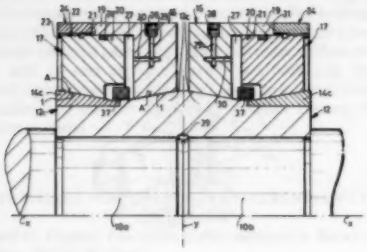
U.S. Cl. 403—15 **16 Claims**

1. A fluid-pressure actuated coupling for securing a part to a shaft rotatable about and centered on an axis, said coupling comprising:

an inner sleeve fitted snugly over said shaft and in good contact therewith and having a pair of axially outwardly flared frustoconical outer surfaces centered on said axis;

an outer piston ring and a separate outer cylinder ring on said sleeve respectively having outwardly flared frustoconical inner surfaces engaging said outer surfaces in surface contact and axially limitedly slidable thereon, said rings being displaceable axially relative to each other between juxtaposed inner positions relatively close to each other and bearing at most lightly on said outer surfaces and spaced-apart outer positions bearing strongly on said outer surfaces and deforming said sleeve radially

inward against said shaft, said cylinder ring overreaching said piston ring and forming therewith a substantially closed pressurizable chamber, one of said rings being formed with a passage having one end at said chamber and another end and one of said rings being rotationally secured to said part, said inner and outer surfaces having



half angles slightly bigger than their respective friction angles;

means at said other end of said passage for pressurizing said chamber therethrough and thereby urging said rings into said outer positions;

means including at least one locking element engageable between said rings for locking same in said outer positions.

4,425,051

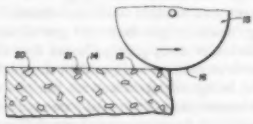
RESTORING SKID FRICTION TO WORN PAVEMENT SURFACES

Bob M. Gallaway, 2904 Par Dr., Bryan, Tex. 77801

Filed Jul. 10, 1979, Ser. No. 56,232

Int. Cl.³ E01C *19/00*

U.S. Cl. 404—72 **4 Claims**



1. The method of restoring skid friction to worn pavement surfaces comprising the steps of rolling a heavy cylindrical drum over the pavement surface to contact the pavement surface with substantially the entire drum surface thereby to exert a force on those aggregate particles in and near the pavement surface and vibrating the drum while rolling on said surface at a frequency above about 1,000 vibrations per minute at an amplitude and rolling speed causing said aggregate to fracture and be rearranged at or near the surface to produce an increased skid friction without substantial chipping and removal of surface materials.

4,425,052

RETAINING WALL

Jeffrey L. McCullers, 4603 Riverhills Dr., Tampa, Fla. 33617

Filed Jun. 30, 1980, Ser. No. 164,798

Int. Cl.³ E02B *3/04*; E02D *29/02*

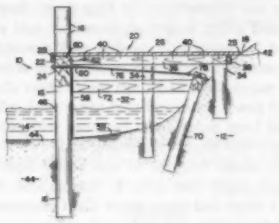
U.S. Cl. 405—32 **4 Claims**

1. A retaining wall disposed along an embankment of a body of water for impeding the erosion of the embankment during movement of the body of water, comprising in combination:

a plurality of wood pilings disposed adjacent to one another along the embankment and embedded into the bed of the body of water in substantially adjacent upright relationship a distance from the natural high water shore line;

each of said pilings being of substantially cylindrical shape to create natural orifices between each pair of pilings to enable water to pass to and from the landward side of said plurality of pilings and to cushion any waves which may strike the plurality of pilings;

a sheet of porous material disposed along the landward side of said pilings, means suspending said sheet from the upper portion of said pilings, said sheet conforming to the substantially cylindrical shape of each of the pilings and being



disposed to cover said natural orifices, said sheet further extending along the bed of the body of water in a landward direction from said pilings to prevent undermining of said pilings;

said sheet including a plurality of pores, said pores permitting water flow in both directions through the sheet but preventing fine particles of sand and soil from passing through said orifices.

4,425,053

OIL FENCE ARRANGEMENT

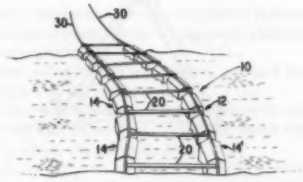
Ikuo Muto, Tokyo, and Masamitsu Tatsuguchi, Yoshikawa, both of Japan, assignors to Mitsui Ocean Development & Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 046,262, Jun. 7, 1979, abandoned. This application Jun. 9, 1981, Ser. No. 271,992

Claims priority, application Japan, Aug. 9, 1978, 53-96077

Int. Cl.³ E02B *15/04*

U.S. Cl. 405—63 **1 Claim**



1. An oil fence unit comprising a pair of oppositely positioned inner and outer float members:

an outer skirt member extending downwardly from said outer float member;

an inner skirt member extending downwardly from said inner float member for surrounding oil spills on the sea surface and to guide them to the lower edge of said inner skirt member in accordance with the inclination thereof under the effect of the hydrodynamic forces of the sea water;

a flexible connecting portion provided to at least one end of each of said outer and inner skirt members to connect one oil fence unit to another in a longitudinal direction at a predetermined distance therebetween;

the length of said flexible connecting portion being greater than the width of said float member;

upper and lower spacing members to separate said outer and inner float members and skirt members at a predetermined distance;

said spacing member being fixed to said flexible connecting portion and the length of each of said spacing member being greater than the length of said float member;

and a plurality of deflecting plates hinged to said lower spacing member to be positioned in parallel to said skirt members for floating oil spills in the underside of said inner skirt member up to the sea surface between said outer and inner skirt members without the influence of the motion of the sea;

whereby oil spills may be collected in a space between said outer and inner float members and skirt members and, when a number of oil fence units are connected, the connected oil fence units are capable of being folded up without removing and separating any members.

4,425,054

MARINE PLATFORM ADAPTED TO FACILITATE THE DETECTION OF POSSIBLE CRACKS

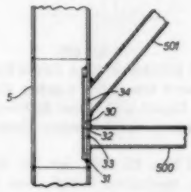
Rene Blondy, Ris Orangis, and Henri Crohas, Meudon, both of France, assignors to Compagnie Francaise Des Petroles, Paris, France

Filed Oct. 14, 1981, Ser. No. 311,229

Claims priority, application France, Dec. 4, 1980, 80 25736

Int. Cl.³ E02B *17/00*; E02D *31/00*; G01M *3/04*

U.S. Cl. 405—211 **4 Claims**



1. In a marine platform comprising a structure including a lattice of hollow tubular leg elements and hollow tubular strut elements sealingly joined to one another, an arrangement for monitoring the fluid tight integrity of the space within at least two of said tubular elements sealingly joined together at a junction zone, characterized by:

(a) an open end of a first one of said tubular elements (500) abutting an exterior surface of a second one of said tubular elements (5) within said junction zone and being sealingly joined to said exterior surface,

(b) a back plate (30; 35) disposed within said second tubular element spaced from an interior surface thereof, and being sealingly fixed to said interior surface surrounding said junction zone to define an intermediate interior space (32) isolated from the remaining interior space of said second tubular element,

(c) open passage means (33) penetrating a wall of said second tubular element within said junction zone to establish fluid communication between the interior of said first tubular element and said intermediate space, and

(d) sensor means for detecting a change in the fluid pressure within said communicated interior of said first tubular element and said intermediate space.

4,425,055

TWO-SECTION ARCTIC DRILLING STRUCTURE

James B. Tiedemann, Fairbanks, Ak., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 2, 1982, Ser. No. 345,261

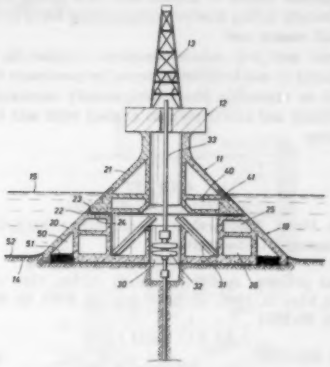
Int. Cl.³ E02B *17/00*

U.S. Cl. 405—217 **17 Claims**

1. A lightweight structure for use in offshore arctic waters comprising:

a lower base section formed by a frustum of a cone, said lower section having at least one plenum chamber formed in the bottom of said lower base section and opened on the bottom, said plenum chamber being formed by the outer surface of the lower section and a vertical circular wall that joins the outer surface of the lower section at its upper end and the bottom surface of the lower section at its lower end;

an upper section, said upper section being adaptable to be



placed on top of said lower base section and sealed thereto; and

means for dewatering the plenum chamber formed in said lower base section after said lower and upper sections have been joined to provide a pressure differential between the outer surfaces of said lower base and upper sections and the bottom surface of said lower section.

4,425,056

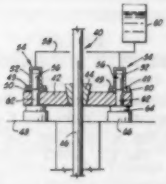
TENSION CONTROL SYSTEM FOR CONTROLLING THE TENSION IN PLATFORM SUPPORTING TENSION LEGS.

Andrew F. Hunter, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 17, 1981, Ser. No. 293,734

Int. Cl.³ E02D *5/74*

U.S. Cl. 405—224 **21 Claims**



17. A tether leg tensioning device useful in preventing loss of tension loading in a tether leg used to moor an offshore tethered platform comprising:

rigid tension load path extension means connectable to the tether leg and projecting along a vertical axis;

rigid load block means connected to the extension means and projecting radially and horizontally outwardly from said vertical axis for redirecting the tension load horizontally;

jack means connected to the load block means and including a piston part and cylinder part movable relative to each other and having one of said piston part and said cylinder part connected to said load block means and synchronously movable therewith;

compressional load transmitting means associated with said jack means for transmitting a compression load from said jack means to the tethered platform, said compressible load transmitting means including:

a load cell adapted to be interposed in the compression load path between said jack means and said platform; and

load plug means resting on said load cell and engaged by said jack means;

means responsive to a reduction in the tension load in said extension means to actuate said jack means to apply a vertically acting tension compensating force to said load block means; and

wherein said jack means comprises a hydraulic cylinder secured to said load block means for movement therewith and an extensible piston reciprocably mounted in said cylinder and extending into contact with said load plug means.

4,425,057

METHOD OF MINING

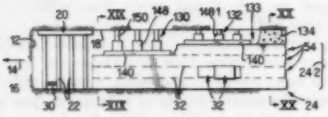
John A. Hahn, Johannesburg, South Africa, assignor to IPI Contractors AG, Switzerland

Filed Oct. 24, 1980, Ser. No. 200,186

Claims priority, application South Africa, Oct. 26, 1979, 79/5752; May 14, 1980, 80/2884; Aug. 12, 1980, 80/4920; Oct. 26, 1980, 80/5591

Int. Cl.³ E02D *15/00*

U.S. Cl. 405—258 **15 Claims**



1. In mining, a method of supporting the hanging wall which includes providing support pillars between the hanging wall and the foot wall, by

building lower portions of the pillar to include particulate backfill material; and

using jacking means in clearance spaces above the backfill and below the hanging wall to bear against the hanging wall to exert a downward pressure on the particulate backfill material, thereby obtaining consolidation of the backfill material in the lower portions of the pillars.

4,425,058

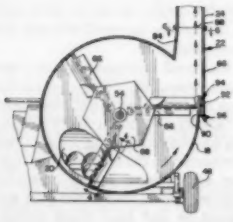
FORAGE BLOWER DISCHARGE CONDUIT

Robert Sorensen, Glen Ellyn; Edward A. Barrett, Glendale Heights, and Thomas J. Scarnato, Barrington, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Sep. 8, 1981, Ser. No. 299,904

Int. Cl.³ B65G *53/58*

U.S. Cl. 406—100 **7 Claims**



1. A centrifugal blower for conveyance of certain materials comprising:

a blower housing of an essentially circular shape including a material feed inlet through which a principal air flow for the blower being supplied and a discharge conduit positioned generally tangentially to said blower housing;

said housing comprising a pair of coaxially spaced side sheets encompassed by a rim sheet;

an impeller located substantially centrally within said housing and having paddles carrying and imparting impetus to said material;

said material discharge conduit comprising:

an outlet opening communicating with a discharge duct attached to said conduit;

a tapering transition section extending from said housing comprising side walls, an inner wall facing said blower housing and outer wall being opposite to said inner wall;

said outer wall being substantially tangential with said blower housing;

guiding means extended between said conduit side walls and substantially tangential to said blower housing for a limited extent for directing the material stream to said duct through said outlet opening; and

said outer wall being offset from and overlapping said guiding means to thereby define an air supply means for facilitating the entry of secondary air flow into said housing thereby supplementing said principal air flow and providing air cushion between air-borne material and said conduit walls.

4,425,059

PROCESS FOR REMOVING A CONCRETE COVERING

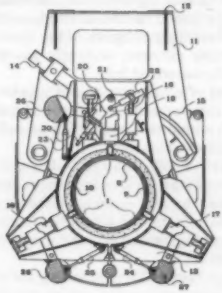
Claude Colas, Notre Dame des Landes; Guy Herve, Nantes; Jean-Louis M. Caputi, and Bruno de Sivry, both of Paris, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Nov. 10, 1981, Ser. No. 320,031

Claims priority, application France, Nov. 13, 1980, 80 24104

Int. Cl.³ B23B *35/00*

U.S. Cl. 408—1 R **8 Claims**

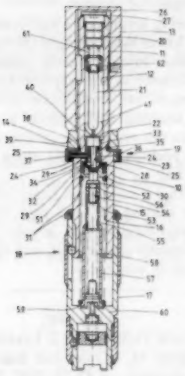


1. A process for removing a concrete covering on a surface provided with an anti-corrosion coating which is covered with a covering of concrete, comprising making trenches in said concrete covering so as to divide said covering into elements which are then detached from said surface, said trenches being made by at least one milling cutter having a generally cylindrical portion with a circular terminal base and comprising longitudinal toothing distributed over said cylindrical portion and a stud projecting axially from the centre of said circular terminal base, wherein a preliminary hole of a diameter larger than that of said stud is first made in said concrete covering at right angles to said surface, said milling cutter is then moved perpendicularly to said surface through the thickness of said concrete covering while said stud is advanced in said preliminary hole, and said milling cutter is then displaced transversely along said surface.

4,425,060
MACHINE TOOL CHUCK

Reiner Bilz, Esslingen, and Otto Fauth, Ostfildern, both of Fed. Rep. of Germany, assignors to Otto Bilz Werkzeugfabrik Kommandit-Gesellschaft, Ostfildern, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 315,991
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046485
Int. Cl.³ B23B 47/24, 49/00, 5/00, 31/10
U.S. Cl. 408—6 21 Claims

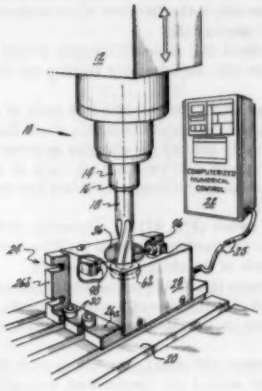


1. A chuck for drilling tools comprising:
a. a shank which is hollow in its interior and which can be accommodated in a machine spindle,
b. a sleeve which is adapted for accommodating a quick change insert,
c. an adjustable torque clutch device arranged between said shank and said sleeve which torque device, in the event of an overload, automatically disengages along with an axial relative displacement between the shank and the sleeve,
d. and a high frequency transmission device within said shank interior, said high-frequency transmission device including
e. a current source of its own,
f. a high-frequency transmitter,
g. an aerial ring, which seeds on the shank, over the exterior thereof,
h. and a switch, which is closable during the axial relative movement between the shank and the sleeve, and the current supply circuit of the high-frequency transmitter and the external aerial ring, said chuck further including:
i. means for sealing the shank interior at both axial end zones of the high frequency transmission device to hermetically seal the latter, wherein said sealing means includes a cast around the exterior of the aerial ring to effect moisture-proof hermetic sealing, and one end of said shank interior being sealed by a screw plug which seals by means of a sealing ring and the other end of said shank interior being sealed by a movable uninterrupted flexible diaphragm cover which is tightly clamped against a portion of the interior of the shank for axially hermetically enclosing the interior in a zone that is provided at an axial distance from the free sleeve end.

4,425,061
TOOL SETTING DEVICE FOR MACHINING CENTER

George F. Kindl, Newington, and Orean E. Michaud, Bristol, both of Conn., assignors to Colt Industries Operating Corp, West Hartford, Conn.

Filed Sep. 14, 1981, Ser. No. 302,250
Int. Cl.³ B23B 49/00, 39/00
U.S. Cl. 408—16 4 Claims

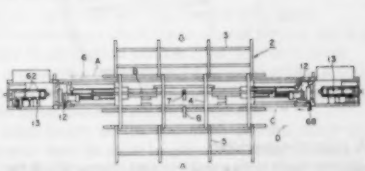


1. A tool setting device for a machine tool having a numerical control comprising:
a frame;
a photodetector mounted on the frame for sensing the approach of a tool tip and generating a first signal;
an axially movable engagement head for contacting the tip of a tool;
a slide mounted on the frame, the engagement head being mounted upon the slide such that axial movement of the engagement head is guided thereby; and
a position transducer, having a displaceable member, mounted upon the frame such that the displaceable member may be displaced by axial movement of the engagement head; the position transducer being adapted to generate a second signal as the displaceable member is initially displaced and a third signal after displacement of the displaceable member to a reference position.

4,425,062
CUTTING AND CHAMFERING APPARATUS FOR OPPOSING ENDS OF TUBULAR MATERIAL

Teruaki Kawamura, Shimonoseki; Tadashi Nishimura, Kitakyushu; Kazuo Akagi, and Ryujiro Shitamatsu, both of Shimonoseki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 14, 1981, Ser. No. 302,124
Claims priority, application Japan, Nov. 6, 1980, 55-157336
Int. Cl.³ B23B 51/08, 39/22; B27C 9/00; B23G 1/20
U.S. Cl. 408—28 12 Claims



1. A cutting and chamfering apparatus for both cutting and

chamfering opposing ends of elongate members, said apparatus comprising:

(a) a plurality of first supports (7) located at axially spaced intervals for supporting an elongate member (6) in a horizontal position;

(b) first and second tables (10) provided respectively at axially opposite sides of said plurality of first supports (7);

(c) first means (11) for displacing said first and second tables (10) back and forth relative to each other independently or simultaneously in the direction of the horizontal axis of the elongate member (6);

(d) a first chuck (32) mounted on each of said first and second tables (10) for releasably holding the elongate member (6);

(e) a second chuck (36) mounted on each of said first and second tables (10) axially inwardly of said first chucks (32) for releasably holding the elongate member (6);

(f) a cutting tool (34) mounted on each of said first and second tables (10) between said first and second chucks (32 and 36);

(g) second means (37B, 41) for displacing each of said cutting tools (34) back and forth in the direction of the longitudinal axis of the elongate member (6);

(h) third means (41, 42A) for displacing each of said cutting tools (34) radially inwardly and outwardly, toward and away from the longitudinal axis of the elongate member (6);

(i) fourth means (43, 44A) for rotating each of said cutting tools (34) around the longitudinal axis of the elongate member (6);

(j) a chamfering tool (13A) mounted on each of said first and second tables (10) independently of said cutting tools (34);

(k) fifth means (57, 58, 59) for displacing each of said chamfering tools (13A) back and fourth in the direction of and along the longitudinal axis of the elongate member (6) independently of movement of said cutting tools (34); and

(l) sixth means (59, 63) for rotating said chamfering tools (13A) around the longitudinal axis of the elongate member (6) independently of rotation of said cutting tools (34).

4,425,063

REAMER WITH A FLAT RECTANGULAR REVERSIBLE CUTTING BIT

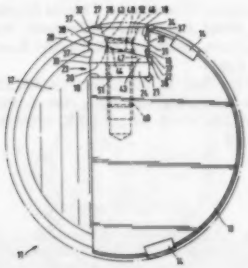
Georg Striegl, Liststrasse 29, 7472 Winterlingen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,730

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948250

Int. Cl.³ B23B *41/00, 51/10;* **B23P** *23/02*

U.S. Cl. 408—81 **8 Claims**



1. A reamer comprising:

a revolvable body with a right-angled recess which has a base surface and a support surface substantially at right angles to said base surface, at least one of said base surface and said support surface being displaced from a radius of the revolvable body;

a base support on said base surface having approximately the form of a rectangular prism with a precision ground upper side and a precision ground lower side and a bore;

a reversible cutting bit on said base support having approximately the form of a rectangular prism, with an upper side and a lower side parallel to each other, four parallel cutting edges, a pair of parallel support webs on side surfaces of the bit, each support web lying between a pair of cutting edges, a clearance rake between each cutting edge and a neighboring support web, a bore at approximately the middle of said cutting bit, a countersunk recess on said middle bore extending from said upper side of said cutting bit, and a countersunk recess on said middle bore extending from said lower side of said cutting bit;

said cutting bit being arranged in said recess such that one of said upper and lower sides engages the upper side of the base support, said base support fixedly establishing a predetermined radial distance of the respective cutting edge from a longitudinal axis of said revolvable body, and one of said support webs abutting said support surface such that the force applied to the respective cutting edge by rotation of the revolvable body is at a slight angle to the plane of the upper surface; and

a single screw with a countersunk head, which passes through said reversible cutting bit and said base support and is screwed into said base surface in said revolvable body to secure said reversible cutting bit and said base support on said base surface in said recess.

4,425,064

RAILWAY CAR TURNTABLE LOADING SYSTEM

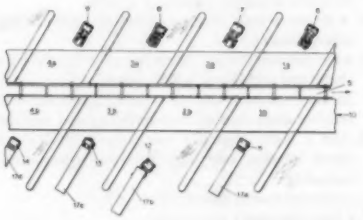
Fedde Walda; Nanne M. Walda, and Benno F. Walda, all of Leendert Sparreboomstraat 13-15, 3087 JJ Rotterdam, Netherlands

Filed Jul. 15, 1980, Ser. No. 169,110

Claims priority, application Netherlands, Jul. 25, 1979, 7905753

Int. Cl.³ B60P *1/00, 3/07;* **B61D** *3/04*

U.S. Cl. 410—1 **16 Claims**



1. In a rail car (18) having a movable loading floor for use with a pair of platforms of substantially equal height and located on respective opposite longitudinal sides of said rail cars for loading and unloading of vehicles, and further having a recessed chassis bottom between fore and aft wheeled support trucks, on which is supported the movable loading floor for carrying and shipping a vehicle (16),

the improvement comprising:

an elongated rotatable loading floor (24) having ends and which is rotatable mounted at a substantially central portion thereof, between said ends, to the rail car chassis, said rotatable loading floor being rotatable relative to said rail car chassis in a substantially horizontal plane over a given angle between first and second positions, said first position being a position in which the longitudinal axis of the rotatable loading floor coincides with the longitudinal axis of the rail car (18), and said second position being a position in which the longitudinal axis of the rotatable loading

floor is at said given angle with the longitudinal axis of the rail car and in which the ends of said rotatable loading floor overlie respective platforms on said opposite sides of the rail car, said rotatable loading floor when in said second position being in operative association with a respective platform on each opposite side of the rail car for transferring a vehicle relative to the rail car;

said platforms having a height which substantially corresponds to the height of said rotatable loading floor when it is in its said second position to permit selective rolling of a vehicle between said rotatable loading floor and said platforms;

means for rotating said rotatable loading floor from said first position to said second position and vice versa; and

hydraulic ram means (39) coupled between said rail car chassis and the wheeled support trucks of the rail car and to said rotating means for raising said rail car chassis relative to said wheeled support trucks of the rail car to a height whereat said rotatable loading floor is above the height of said platforms before said rotating means can rotate said rotatable loading platform.

4,425,065

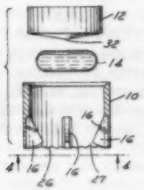
ADHESIVELY SECURABLE FASTENER

Theodore J. Sweeney, Grosse Pointe, Mich., assignor to Theodore Sweeney & Company, Detroit, Mich.

Division of Ser. No. 936,331, Aug. 24, 1973, abandoned. This application Feb. 11, 1981, Ser. No. 234,777

Int. Cl.³ F16B *13/04, 47/00*

U.S. Cl. 411—23 **6 Claims**



1. An adhesively securable fastener comprising:

a. a body having an opening and also having an indented portion;

b. an adhesive mass positioned within said body; and

c. registering with the opening of the body and constructed to align with the indented portion of the body, a plunger means for applying pressure to said adhesive, thereby adhesively securing the fastener to a substrate by movement of at least a portion of the adhesive from the body to the substrate wherein the adhesive is located between the plunger and the indented portion of the body; said indented portion is indented towards the plunger.

4,425,066

DRILL SCREW

Harald Kolimann, Suedstrasse 21, 5860 Iserlohn, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,590

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022187

Int. Cl.³ F16B *35/00*

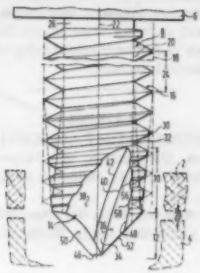
U.S. Cl. 411—387 **5 Claims**

1. A drill screw for fastening a structural member to a hard supporting member comprising:

(a) a shank having a head at one end and,

(b) a drilling section at the other end of said shank, said drilling section including a pair of diametrically opposite flutes, said flutes each defined by three substantially flat surfaces, a pair of heel surfaces intersecting to form a chisel point,

(c) machine threads on said shank extending substantially to said heel surfaces, said threads having flat crests adjacent the drilling section and sharp crests at middle portions of said shank, and said threads having flat root sections adjacent the drilling section and sharp root sections at middle portions of said shank, said threads having substantially uniform pitch, and said flat root sections tapering radially



outwardly in a direction away from said head, and said flat crest portions tapering radially inwardly in a direction away from said head, said threads intersecting a substantial portion of said flutes,

whereby said screw can simultaneously drill and tap said hard supporting member.

4,425,067

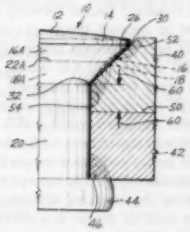
FATIGUE RESISTANT RIVET

John E. Krezak, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1980, Ser. No. 218,819

Int. Cl.³ F16B *19/00*

U.S. Cl. 411—500 **28 Claims**



1. A fatigue resistant and sealing rivet, for use in a shallow countersink and for providing increased bearing length along the shank, without a second counterbore and its requirement for close tolerances, and for providing additional friction between fastened work pieces;

said rivet comprising:

a cylindrical shank;

a head on one end of said shank;

said head generally tapering toward said shank;

said head having a distal frusto-conical portion and a proximate frusto-conical portion relative to said shank;

said proximate portion having a conical surface at a smaller angle relative to the shank axis than the conical surface of said distal portion relative to said axis;

the axial length of the proximate portion being slightly greater than the axial length of the distal portion;

said distal and proximate portions being joined at a common diameter;

said common diameter being the longest diameter of said

proximate portion and the shortest diameter of said distal portion; and

a cylindrical edge portion of said head extending axially outwardly from said distal conical portion, said cylindrical edge portion being very short axially compared with said conical portions and having the largest diameter of said distal portion; and

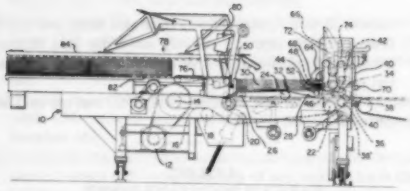
said proximate and distal portions being divergeable radially, along the common diameter and on both sides thereof, while the rivet is being fastened to form a continuous conical surface in pressure relationship with a continuous conical countersink surface.

4,425,068

BUNDLE FORMER FOR PAPERBOARD BOXES

Everarist B. Wilson, Hagerstown, and Meyer L. Ruthenberg, Owings Mills, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 10, 1981, Ser. No. 292,219
Int. Cl.³ B65H *31/34;* B65G *57/30*
U.S. Cl. 414—36 **3 Claims**



1. In a bundle former for counting and stacking folded paperboard boxes received from the flexo-folder-gluer comprising a frame on which are mounted upper and lower pull rolls for receiving said boxes, drive means for said pull rolls and belt, backstop, squaring means and stack removal means, said belt, backstop and squaring means forming a stacking station and transfer means to receive the stacks of boxes from the stacking station, the improvements comprising:

(a) the collar of said upper pull roll which operably engages the drive means being larger in diameter than the collar of said lower pull roll whereby said upper and lower pull rolls urge said blank into frictional contact with a preceding blank to urge said blank into squareness with said preceding blank;

(b) a plurality of lift means and drive means therefore mounted in said stacking station adapted to receive the trailing edge of said boxes entering the stacking station, said drive means adapted to rotate said lift means at a speed greater than the rate of entry of said boxes in said stacking station.

4,425,069

TRANSPORT FOR LOADING SEMITRAILERS AND THE LIKE

Charles Saur, Sparta, and Samuel J. DeMan, Grand Rapids, both of Mich., assignors to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Jun. 12, 1981, Ser. No. 273,117
Int. Cl.³ B65G *67/08;* B61K *7/00;* B65G *41/02*
U.S. Cl. 414—398 **31 Claims**

1. A transport for loading semitrailers and the like, comprising:

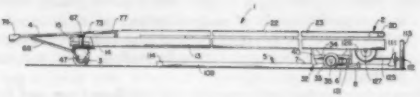
an elongate conveyor having means for conveying articles from an upstream end to a downstream end of said conveyor;

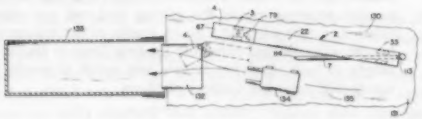
means for movably supporting said conveyor on the floor surface of a loading area;

means for guiding said portable conveyor into a selected storage position in the loading area, and comprising:

a pair of guides connected with the upstream end of said conveyor, and depending therefrom to a position adjacent to the floor surface;

a guide rail adapted for anchoring onto the loading area floor surface at a position corresponding to the selected conveyor storage position; said guide rail upstanding from the floor surface, and having a width which is matingly





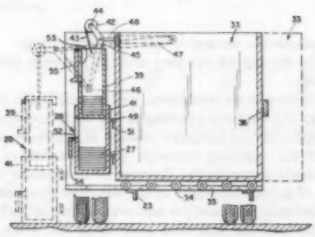
received between said guides for positively guiding the upstream end of said conveyor into the selected storage position; said guide rail being shorter than said conveyor, whereby said conveyor is bodily detachable from said guide rail for readily transporting said conveyor to various locations.

4,425,070

SEPARATED DISCARDS CARRIER

John N. M. Howells, Kittery, Me.; Drew W. Morris, Hampton, and Richard L. Tichenor, Portsmouth, both of N.H., assignors to Recycling & Conservation, Inc., Kittery, Me.

Filed Jun. 14, 1979, Ser. No. 35,802
Int. Cl.³ B65F *3/08*
U.S. Cl. 414—498 **3 Claims**



1. A dual purpose trash compactor vehicle of the type comprising:

a vehicle frame having a driver's cab separated by a space from a rear loading trash compactor;

a glass collection bin, a can collection bin and a newspaper rack, all normally located in the space between said cab and compactor, power driven loading buckets normally located at curb side level but mechanically liftable up to the level of the tops of said bins for dumping cans and bottles therein, and means for off-loading said bins and rack, when filled, laterally of said vehicle and replacing the same, said vehicle characterized by;

said newspaper rack being formed of an inner container telescoped within an outer container, each having a registering front opening for receiving newspapers, said telescoped containers being normally at curb side level but the inner container being liftable to extended position, when filled, to permit the outer container to be filled;

and power means for lifting said inner container relative to

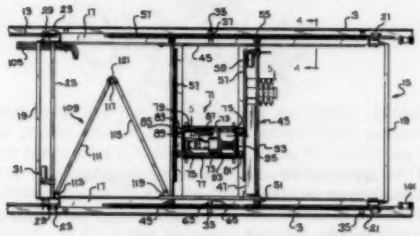
said outer container and for bodily transporting both containers laterally off said vehicle.

4,425,071

APPARATUS FOR LOADING AND UNLOADING CARGO FROM A TRAILER

Glenn G. Dunbar, Dunbar Manufacturing, 2608 Overbrook, Toledo, Ohio 43614

Filed Jan. 21, 1981, Ser. No. 226,950
Int. Cl.³ B60P 1/00, 1/54
U.S. Cl. 414—542 27 Claims



1. Material handling apparatus for a trailer having opposed side walls and an open end comprising:

support brackets positioned on said opposed sidewalls of said trailer; a frame moveably positioned on said support brackets, said frame being supported on rollers and said rollers engage said support brackets to allow said frame to be moveably positioned on said support brackets, said frame being capable of moving along said support brackets in a direction substantially parallel to said sidewalls of said trailer, said frame being disposed to allow said frame to extend out said open end of said trailer;

balance rollers positioned on one end of said frame, said balance rollers engaging said support brackets opposite said rollers upon which the frame is supported, said balance rollers engaging said support brackets to balance said frame when said frame extends from said open end of said trailer, said balance rollers located on said end of said frame that does not extend out of said open end of said trailer;

a support roller positioned at each end of said support brackets adjacent said open end of said trailer, said support rollers being disposed to engage and support said frame when said frame extends out said open end of said trailer;

a lifting frame moveably positioned on said frame, said lifting frame being capable of moving along said frame in a direction substantially parallel to said sidewalls of said trailer, said lifting frame being capable of moving along substantially the entire length of said frame;

a lifting means moveably positioned on said lifting frame, said lifting means being capable of moving in a direction substantially parallel to and substantially perpendicular to said opposed sidewalls of said trailer, said lifting means being capable of lifting objects that are transported in said trailer whereby said objects can be lifted and said lifting means, lifting frame and frame can be moved with respect to said trailer for loading and unloading said objects.

4,425,072

MATERIAL HANDLING EQUIPMENT EXTENSION APPARATUS FOR WRECKING AND THE LIKE

Daniel D. Lewis, Hudson Falls, N.Y., assignor to Efficiency Production, Inc., Lansing, Mich.

Filed Mar. 20, 1981, Ser. No. 245,932
Int. Cl.³ B66C 23/36
U.S. Cl. 414—724 19 Claims

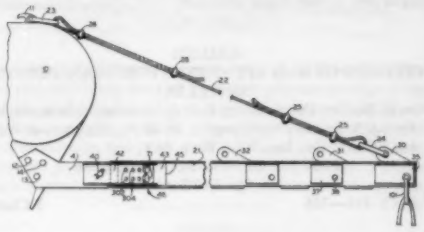
1. Wrecking apparatus for use with material handling equipment, said material handling equipment having a pivotable working member, comprising:

a rigid boom member;

a flexible member;

means for attaching a first end of said flexible member to said pivotable working member proximately a first lip of said pivotable working member;

first and second hinge means for pivotably attaching a first end of said boom member to said pivotable working member proximately a second lip of said pivotable working member;



means for attaching a second end of said flexible member to said boom member proximately a second end of said boom member;

a massive wrecking ball member; and

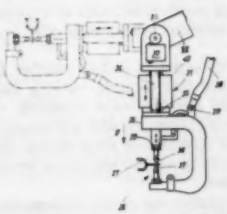
means for attaching said massive wrecking ball member to said boom member proximately said second end of said boom member; and wherein said pivotable working member is a hydraulicly driven bucket.

4,425,073

PIVOTALLY SUPPORTED GRIPPING MECHANISM

Karl-Erik Mattsson, Naesum, Sweden, assignor to Festo-Maschinenfabrik Gottlieb Stoll, Esslingen am Neckar, Fed. Rep. of Germany

PCT No. PCT/DE79/00066, § 371 Date Dec. 10, 1980, § 102(e) Date Dec. 10, 1980, PCT Pub. No. WO81/00076, PCT Pub. Date Jan. 22, 1981
PCT Filed Jun. 28, 1979, Ser. No. 224,579
Int. Cl.³ B25J 3/04; B23K 11/36
U.S. Cl. 414—730 19 Claims



1. A gripping mechanism which is supported for pivotal movement about a first axis having a horizontal component, comprising two gripping means supported for relative movement toward and away from one another, between which a workpiece can be clamped, clamping means supplied with energy by an energy source for effecting said relative movement of said gripping means, an angle indicator which measures the angular position of said gripping mechanism with respect to a vertical reference, and a modulator responsive to said angle indicator and connected between said energy source and said clamping means, the energy supplied from said energy source to said clamping means being regulated by said modula-

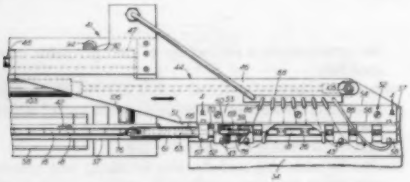
tor in dependence on the angular position of said gripping mechanism with respect to the vertical reference as measured by said angle indicator, said clamping means exerting on said gripping means a clamping force which in a predetermined manner is dependent on the angular position of said gripping mechanism, said angle indicator including a weight member which is supported for pivotal movement about a second axis spaced from its center of gravity, said weight member being adjustably supported on a lever which is supported for pivotal movement about said second axis and is coupled to a movable output part of said angle indicator.

4,425,074

METHODS OF AND APPARATUS FOR TRANSFERRING ARTICLES

Alan R. Becker, Coopersburg; Jack J. Monahan, Allentown, and Fred J. Schneider, Northampton, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,886
Int. Cl.³ B65G *41/00*
U.S. Cl. 414—736 **5 Claims**



1. A method of transferring a plurality of articles between first locations having first predetermined spacings and second locations having second predetermined spacings, which comprises:

moving a support structure to advance a first pickup member, fixedly mounted to said support structure, between an end location of said first locations and a corresponding end location of said second locations;

guidedly supporting in linear extension from said first pickup member a plurality of second pickup members, each such member having a predetermined width;

resiliently urging apart said plurality of second pickup members from each other and from said first pickup member;

compressing into adjacent contact said first and said plurality of second pickup members with a force overcoming said resilient urging, whereby said predetermined widths of said pickup members establish an alignment of each of said pickup members with a respective one of said first locations;

on movement of said first pickup member from said end location of said first location, moving said plurality of second pickup members from alignment with said first locations toward alignment with said second locations and releasing said compressive force during such movement thereby generating relative movement between all of said pickup members;

arresting such relative movement between said plurality of pickup members in response to said resilient urging at predetermined positions of the second pickup members relative to each other and to said first pickup member by engaging a protrusion from each of the second pickup members with a respective one of a plurality of stop surfaces located in such support structure, each of such stop surfaces being precisely located relative to such first pickup member and relative to such other stop surfaces, such that the spacing between said predetermined positions corresponds to said second predetermined spacings; and

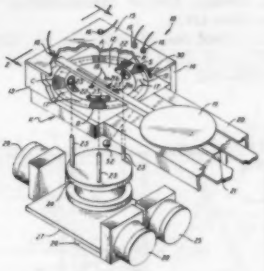
selectively activating and deactivating the pickup members to engage and release said articles at said first and second locations.

4,425,075

WAFER ALIGNERS

Peter W. Quinn, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 20, 1981, Ser. No. 255,415
Int. Cl.³ B65G *51/02, 47/24*
U.S. Cl. 414—755 **4 Claims**



1. An apparatus for aligning a wafer, comprising,

a platform for receiving the wafer,

a plurality of air jet orifices disposed through the surface of said platform oriented to spin the wafer,

a source of air,

first valve means for connecting said source of air to said orifices,

at least two pulsating vacuum orifices disposed through the surface of said platform for periodically stopping the wafer during its spin,

a source of vacuum,

second valve means for connecting said source of vacuum to said vacuum orifices,

control means causing said pulsating vacuum orifices to pulsate at a first rate and at a second rate faster than said first rate when the wafer reaches a predetermined position in its spin,

solar cell means disposed in said platform providing signals representative of the position of the wafer on said platform in the α, y and θ directions,

oscillator means connected to said solar cell means and with said second valve means for connecting and disconnecting said source of vacuum to said vacuum orifices at said first rate and at said second rate when said wafer reaches said predetermined position,

first means included within said control means connected to said first and second valve means for disconnecting said source of air and said source of vacuum from said air jet orifices and vacuum orifices, respectively, when the wafer is positioned to within a first predetermined tolerance,

mechanical means connected to said control means for moving the wafer in the α, Y and θ directions until the signals from said solar cell means equal a predetermined value indicative that the wafer is centered to within a second predetermined tolerance.

4,425,076

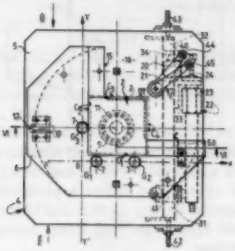
PROCESS AND APPARATUS FOR AUTOMATIC POSITIONING OF A SUBSTRATE ON A WORKTABLE

Robert C. Colineau, Angers, France, assignor to Compagne Internationale pour l'Informatique Cii Honeywell Bull (Societe Anonyme), France

Filed Dec. 16, 1981, Ser. No. 331,283
Claims priority, application France, Dec. 24, 1980, 80 27417
Int. Cl.³ B65H *9/10*
U.S. Cl. 414—781 **4 Claims**

1. Apparatus for automatically positioning a piece such as a support (2) for electronic components comprising a worktable (4), a reference system (3) defined on the table by three fixed stops (G1, G2, G3), said reference system including a first axis

(X'X) of the reference system passing through two of the three stops, and a second axis (Y'Y) perpendicular to the first axis and passing through the third stop (G3) and cutting the first axis at a point O outside of the part of the first axis situated



between the two first stops (G1, G2); the support (2) having the general form of a rectangular parallelopiped presenting four lateral sides (C1, C2, C3, C4), means for positioning the support (2) on the worktable (4) in the quadrant (X O Y) of the reference system (3) with the half-axis (O X) passing through the two first stops (G1, G2) and the half axis (O Y) passing through the third stop (G3), two arms (20, 21) extending in horizontal planes and respectively connected at one extremity with two vertical axes (25, 26) driven in rotation and in opposite directions with one respect to the other, and a single motor means (22) for driving said arms (20, 21), said single motor means (22) comprising at least two elements (31 and 32) movable in two opposite directions and respectively associated with the said two axes (25, 26), a jack (22) having a body (23) and piston rod (24) floatingly mounted, the rod (24) of the jack (22) being connected to a first movable rack (31) arranged to engage a first pinion (29) for rotation of the driving axis (25) of one of the positioning arms (20) and the body of the piston (23) being connected to a second movable rack (32) parallel to the first rack (31) and which engages a second pinion (30) fixed for rotation of the driving axis of the other positioning arm (21), the two driving axes (25, 26) being coaxial, first means for controlling the displacement of the first arm (20) so as to cause the first arm to contact the support (2) and position the lateral side (C1) of the support (2) against the first stops (G1, G2) of the reference system (3), the first arm (20) contacting the lateral side (C3) of the support opposed to that side in contact with the two first stops (G1, G2), second means for controlling the displacement of the second arm (21) so as to cause the second arm to contact the support (2) and position it in a movement of translation parallel to the axis (X' O X) and bring the lateral side (C2) of support (2) adjacent the third stop (G3) of the reference system (3) and causing it to bear against the third stop, this second arm (21) contacting the lateral side (C4) of the support opposed to that coming in contact with the third stop (G3) of the system of reference (3), and means for maintaining the support (2) against the stops (G1, G2, G3) of the reference system (3) during mounting the electronic components on the support.

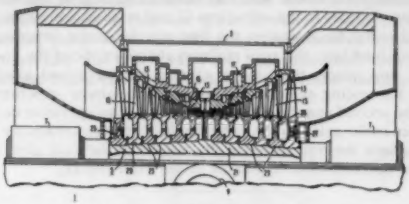
4,425,077

TURBINE DISC ENVIRONMENT CONTROL SYSTEM

Harry F. Martin, Upper Providence, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1981, Ser. No. 291,744
Int. Cl.³ F01D 5/08
U.S. Cl. 415—115 **4 Claims**

1. A steam turbine comprising a plurality of rotatable blade discs so shaped and having a bore which fits tightly on a shaft to form a rotor with a generally closed cavity between adjacent rotatable discs, the cavities being disposed serially with respect to the steam flow from a high pressure to a low pressure portion of said turbine; a plurality of ports disposed in a radially inward portion of said rotatable blade discs; a supply of high pressure inlet steam for said turbine; and means for



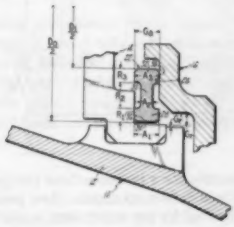
supplying said high pressure inlet steam to the upstream side of said rotatable blade discs in the higher pressure portion of said turbine; said ports being a predetermined size and so disposed that steam entering each of said serially disposed downstream cavities through said ports is throttled and thus superheated to eliminate moisture in the rotor cavities and thereby inhibiting stress corrosion adjacent the bore of said rotatable blade discs.

4,425,078

AXIAL FLEXIBLE RADIALLY STIFF RETAINING RING FOR SEALING IN A GAS TURBINE ENGINE

Donald A. Robbins, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 18, 1980, Ser. No. 170,251
Int. Cl.³ F01D 25/26
U.S. Cl. 415—135 **8 Claims**



1. For a gas turbine engine of the type having a first annular stator structure, and a second annular stator structure spaced axially and radially from the first annular structure leaving an axial gap G_a and a radial gap G_r therebetween which change during operative conditions and having a radially free standing annular ring which restrains radially the first structure during operative conditions, the improvement which comprises:

a radially free standing annular ring which is adapted to abuttingly engage the first annular stator structure in a first axial direction at a first zone of axial contact, to abuttingly engage the second annular stator structure in a second axial direction at a second zone of axial contact and to slidably engage the second annular structure in the radial direction, the ring having a radial stiffness characteristic, an axial stiffness characteristic and being formed of

an outermost first annular section which is adapted to abuttingly engage the first annular stator structure in the radial direction and the first axial direction and which has an axial width A_1, a radial height R_1 and an axial width to radial height ratio which is greater than one $(A_1/R_1 > 1.0)$, and

a second annular section adapted for axial flexibility between the first zone of axial contact and the second zone of axial contact, the second annular section being attached to and extending inwardly from the first annular section, the second annular section having an axial width A_2 which is less than the axial width A_1 of the first annular section $(A_2 < A_1)$, a radial height R_2, and an axial width to radial height ratio which is less than one $(A_2/R_2 < 1.0)$,

wherein the radial stiffness characteristic of the annular ring and the slidable engagement between the annular ring and the second annular stator structure adapts the ring to accommodate changes in the radial gap G_r and to exert a predetermined radial force against the first annular stator structure without buckling, the axial stiffness characteristic of the annular ring adapts the ring to exert a predetermined axial force for sealing against the abutting first annular structure and the second annular structure in response to operative decreases in the axial gap G_a, and the axial stiffness characteristic adapts the ring to elastically deflect in the axial direction to accommodate decreases in the axial gap G_a.

4,425,079

AIR SEALING FOR TURBOMACHINES

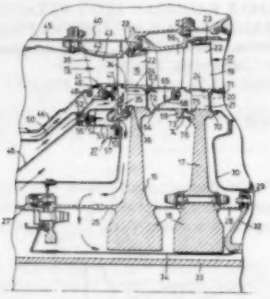
Trevor H. Speak, Gloucester; John D. Kernon, and Derek A. Roberts, both of Bristol, all of England, assignors to Rolls-Royce Limited, London, England

Filed Jul. 27, 1981, Ser. No. 286,967

Claims priority, application United Kingdom, Aug. 6, 1980, 8025692

Int. Cl.³ F01D *5/08*

U.S. Cl. 415—139 **9 Claims**



1. A stator assembly for a turbomachine comprising a stator vane assembly which defines an annular flow passage, an annular sealing plate carried by the stator vane assembly but moveable radially relative to the stator vane assembly, the sealing plate being provided with one or more surfaces which co-operate with one or more surfaces on a rotor assembly adjacent to the sealing plate to define an air seal which reduces the flow of air radially outwards towards the annular flow passage, the sealing plate being provided with a thermal slugging mass shaped, constructed and arranged so that in use its thermal response controls the rate of thermal expansion and contraction of the sealing plate in radial directions to match the rate of thermal expansion and contraction of the rotor assembly in radial directions and thereby control the spacing between the surfaces on the seal plate and the rotor assembly that co-operate to define the air seal.

4,425,080

GAS TURBINE ENGINE CASING

William A. Stanton, Thorneywood; Jonathan Hazlewood, Darley Abbey, and Norman A. Kerridge, Little Eaton, all of England, assignors to Rolls-Royce Limited, London, England

Filed Jan. 5, 1982, Ser. No. 337,294

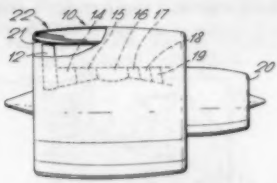
Claims priority, application United Kingdom, Feb. 14, 1981, 8104673

Int. Cl.³ F04D *29/40*

U.S. Cl. 415—197 **12 Claims**

1. In a gas turbine engine having a duct defining fixed structure and at least a rotating part positioned within the duct, the improvement of a containment ring carried by said duct and positioned radially outwardly of said rotating part for absorbing energy and retaining a missile thrown radially outwardly by said rotating part, said containment ring comprising:

a substantially rigid cylinder coaxial with and carried by said duct, said rigid cylinder having an inner periphery and an outer periphery;



a fibrous material having one end bonded to the outer periphery of said rigid cylinder and being wound around said rigid cylinder to define a plurality of layers, said fibrous material having another end bonded to an adjacent one of said layers, and said layers having an outermost curved surface;

a plurality of axially extending and circumferentially spaced strips positioned upon the outermost curved surface of said plurality of layers;

fastening means extending into said layers of fibrous material and securing said strips thereto; and

second fastening means securing said strips to adjacent fixed structures.

4,425,081

CENTRIFUGAL PUMP WITH DISMOUNTABLE DIFFUSER

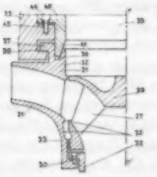
Wladyslaw Raczynski, Margency, France, assignor to Framatome, Courbevoie, France

Filed Jun. 10, 1981, Ser. No. 272,160

Claims priority, application France, Jun. 20, 1980, 80 13753

Int. Cl.³ F03B *3/18*

U.S. Cl. 415—211 **6 Claims**



1. Centrifugal pump with a dismountable diffuser for circulating a fluid, comprising

(a) a volute constituted by an enclosure having openings for the entry and the exit of said fluid;

(b) a dismountable suction pipe fixed to said volute at the level of the entry opening for said fluid and directed towards the inside of the latter;

(c) a rotor placed inside said volute fixed to a shaft passing through an aperture provided in the wall of said volute and permitting the passage of said rotor, for joining said shaft to a drive motor as well as a diffuser of annular shape having for axis of symmetry of revolution the axis of rotation of said rotor, arranged around said rotor inside said volute and fixed to said suction pipe at one of its ends;

(d) said diffuser comprising at least three parts separable and couplable along coupling surfaces traversing the whole body of said diffuser between its inner surface located towards said rotor and its outer surface directed towards the inner surface of said volute and between its coupling end with said suction pipe provided with dismountable connecting means and its opposite end;

(e) each of said parts of said diffuser being machined along an annular groove portion with a trapezoidal section at its end opposite the end coupling with said suction pipe and including a projection forming a ring portion;

(f) said volute comprising an annular groove for the engagement of the annular projections of each of said parts of said diffuser, a centering part including an annular portion

with a trapezoidal section being removably fixed to said volute for engagement in said annular groove with the trapezoidal section constituted by the groove portions of the diffuser parts, when they are juxtaposed for the mounting of the latter.

4,425,082

COMPOSITE HUB FOR A HELICOPTER ROTOR

Fiorenzo Mussi, Milan, and Emilio Pariani, Cardano Al Campo, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed Jan. 6, 1982, Ser. No. 337,442
Claims priority, application Italy, Feb. 5, 1981, 67153 A/81
Int. Cl.³ B64C 11/06
U.S. Cl. 416—61 6 Claims

1. A composite hub for a helicopter rotor in the form of a flat plate (1) having a plurality of apertures (2) uniformily peripherally distributed about a central axis of rotation of the said rotor, each said aperture (2) being able to house an elastomeric coupling for connection to an associated blade; characterized by the fact that the said plate (1) has a laminated structure including a force distributor element (8) constituting a central flat layer of the plate; a plurality of radial leaf elements (17, 18) disposed on each side of the said distributor element (8) and lying in planes perpendicular to the said axis of rotation, the said radial leaf elements (17, 18) extending radially outwardly therefrom; annular leaf elements (23, 24) disposed on each side of the said distributor element (8) and extending in contact with the free end of the associated plurality of said radial leaf elements (17, 18) in a plane perpendicular to the said axis of rotation; and a plurality of axial leaf elements (25) each extending parallel to the said axis of rotation and in contact with the said distributor element (8) and associated said radial leaf elements (17, 18), each of said axial leaf elements (25) constituting a substantially C-shaped collar positioned around one of said apertures (2) with its concavity facing outwardly to partially define an inner surface of said one of said apertures (2).

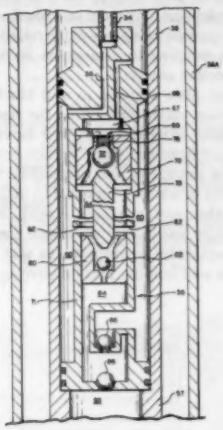
4,425,083

VELOCITY ACTUATED VALVE FOR A DOWNHOLE PUMP

Daniel G. Peterson, Los Angeles, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe, Inc., City of Commerce, Calif.

Filed Aug. 31, 1981, Ser. No. 298,060
Int. Cl.³ F04B 47/12
U.S. Cl. 417—56 5 Claims

1. A downhole pump for pumping production fluid from a subterranean well production zone comprising: a pump housing for positioning in a production zone of the well; piston means vertically slidably disposed within said pump housing; inlet means formed in said housing for fluid communication between a source of pressurized fluid pulses and one side of said piston means; outlet means formed in said housing for fluid communication between another side of said piston means and a portion of the well above said pump housing; an orifice formed in said piston means for fluid communication between said inlet means and said outlet means; fluid conduit means communicating between the lower side of said piston means and said production zone; a first check valve closing said fluid conduit means in response to the pressurized fluid pulses; a second check valve disposed in said fluid conduit means between said first check valve and said production zone; said second check valve being closed by downward movement of



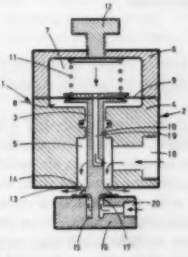
said piston means; and closure means responsive to fluid flow through said orifice for closing said orifice when a predetermined pressure differential across said piston means is exceeded, whereby said pressurized fluid pulses move said piston means upwardly in said housing in a power stroke to pump production fluid from said production zone to said upper portion of the well.

4,425,084

EJECTOR DEVICE

Peter Tell, Österskär, Sweden, assignor to AB Piab, Stockholm, Sweden

Filed Nov. 24, 1981, Ser. No. 324,473
Claims priority, application Sweden, Dec. 11, 1980, 8008733
Int. Cl.³ F04F 5/00
U.S. Cl. 417—161 8 Claims



1. An ejector comprising,

a housing having an internal cavity and an inlet and outlet extending through said housing portion to said cavity for passage of fluid to be evacuated from said housing inlet to said housing outlet, said housing portion cavity comprising a compartment divided into two chambers by a diaphragm extending across said compartment, one of said chambers being at atmospheric pressure, and the other of

said chambers communicating with a portion of said housing portion cavity between said housing portion inlet and outlet;

a block portion having an internal cavity and an inlet and outlet extending through said block portion to said block portion cavity for passage of pressurized fluid from said block portion inlet to said block portion outlet to facilitate evacuation of said fluid to be evacuated, said housing portion outlet being adjacent said block portion outlet and said block portion being moveable relative to said housing portion in response to changes in fluid pressure in said housing portion cavity;

an adjustment plate coupled to said block portion at said block portion outlet for varying the size of said housing portion outlet in response to said movement, said plate being spaced from said block portion outlet to provide an opening for passage of said pressurized fluid; and,

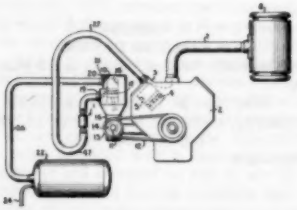
a stem one end of which is attached to said adjustment plate and the other end of which extends into said housing portion cavity and is attached to said diaphragm for causing said movement in response to said changes in fluid pressure in said housing portion cavity.

4,425,085

CHECK VALVE ARRANGEMENT FOR ENGINE DRIVEN PNEUMATIC COMPRESSORS

James McReynolds, 1425 College Way, Apt. 401, Olathe, Kans. 66061

Filed May 13, 1982, Ser. No. 377,988
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—364 **5 Claims**



1. A pneumatic power system comprising:

(a) an engine having an air induction manifold into which air is drawn;

(b) a pneumatic compressor associated with said engine and having an oil sump, internal compression means, start and stop means, an air inlet and an air outlet;

(c) an air outlet conduit extending from and communicating said air outlet with air actuated devices;

(d) an air inlet conduit extending from and communicating said compressor air inlet with said engine manifold, said compressor drawing air through said inlet conduit when said compressor is running and said engine drawing air and creating a vacuum in said inlet conduit when said compressor is not running; and

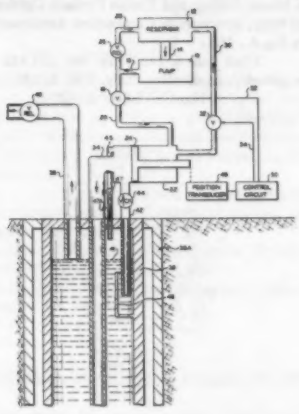
(e) a one-way check valve in said air inlet conduit operable to provide one-way flow of air into said compressor when said compressor is running and having valve means blocking said conduit in response to vacuum therein and prevent said vacuum from reaching said compressor when said compressor is not running.

4,425,086

COMBINED SURFACE POWER UNIT AND VELOCITY ACTUATED VALVE FOR A DOWNHOLE PUMP

Daniel G. Peterson, Los Angeles, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe, Inc., City of Commerce, Calif.

Filed Aug. 31, 1981, Ser. No. 298,122
Int. Cl.³ F04B *35/02*
U.S. Cl. 417—388 **9 Claims**



1. An apparatus for pumping production fluid from a subterranean well utilizing a source of pressurized fluid in a downhole pump comprising: means for cyclically applying the pressurized fluid to an inlet of the downhole pump; said pump including a housing having a piston means vertically slidably disposed therein for reciprocating movement, one side of said piston means being in fluid communication with said pump inlet and another side of said piston means being in fluid communication with an upper portion of the well above the downhole pump; and velocity actuated valve means including an orifice formed in said piston means in fluid communication with said two sides of said piston means and closure means responsive to a predetermined pressure differential across said orifice for closing said orifice, whereby said pressurized fluid moves said piston means in an upwardly direction to pump fluid on said another side of said piston means to said upper portion of the well for withdrawal therefrom; said piston means including an upper piston head and a lower piston head defining a piston chamber therebetween; said another side of said piston means constituting the upper side of said upper piston and said one side of said piston means constituting the lower side of said upper piston, and a check valve in said lower piston head for fluid communication between a source of production fluid and said piston chamber during the fall of said piston means.

4,425,087

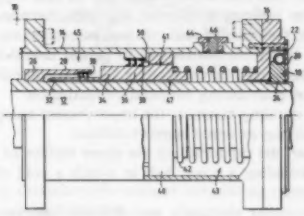
PRESSURE EQUALIZING DEVICE AND DEEP WELL MOTOR/PUMP COMBINATION

Deryk S. M. Gould, Edinburgh, Scotland, assignor to Northern Engineering Industries, England

Filed Nov. 27, 1981, Ser. No. 325,571
Claims priority, application United Kingdom, Dec. 11, 1980, 8039708
Int. Cl.³ F04B *35/04*; H02K *5/12*
U.S. Cl. 417—414 **4 Claims**

1. A pressure equalizing device in combination with an electric motor and a pump driven by said motor for deep well operation which motor has a housing and a shaft which extends through the housing and is rotatable relatively thereto, said device comprising a cylinder which is secured to said

housing, said shaft extending coaxially within said cylinder, an annular piston through which said shaft extends and which is arranged coaxially therewith in said cylinder for movement therealong to define therein with said cylinder a variable volume in communicating relationship with the interior of said housing, said variable volume containing fluid compatible with operational requirements of said motor, said cylinder having an annular end wall remote from said housing and embracing said shaft, a seal arranged between said end wall and said shaft, a chamber defined within said cylinder between said piston and said end wall, a spring in said chamber against which said piston moves when said variable volume increases, means defining a port through said cylinder establishing communication between said chamber and the exterior of said cylinder,



filter means in said port, first and second lip seal means which are arranged respectively between said cylinder and said piston and between said piston and said shaft, and which at least in the absence of rotation of said shaft resist flow of said fluid from said variable volume to said chamber to maintain said fluid pressurized above ambient pressure under an applied load imposed by said piston and said spring, said second lip seal means being rotatable with said shaft in sealed relationship therewith and including annular lip means which is engageable with said piston, said lip means being displaceable away from said piston by centrifugal force in response to rotation of said shaft to permit equalization of pressure between said variable volume and said chamber whereby ambient pressure is directly communicated to said motor housing.

4,425,088

VANE-STATOR BOTTOM ASSEMBLY FOR ROTARY HYDRAULIC DEVICES

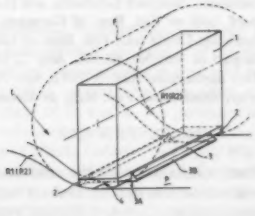
Jacob Kaegi, La Celle Saint-Cloud, and Daniel Leroy, Limay, both of France, assignors to Compagnie de Construction Mecanique Sulzer, France

Filed Sep. 18, 1981, Ser. No. 303,679

Claims priority, application France, Sep. 19, 1980, 80 20208

Int. Cl.³ F01C *19/00*; F04C *27/00*

U.S. Cl. 418—147 **6 Claims**



1. A vane-stator bottom assembly for rotary hydraulic devices of the volumetric pump type with coaxial stator and rotor and axially slidable vanes in the rotor, the stator comprising at least one bottom surface having a variable number of recesses therein with ramps and rectilinear zones suited to the operation, said vanes following said bottom surface, wherein said stator bottom is machined with a circumferential motion cylindric milling cutter and said vane comprises a cylindric base for contacting said ramps of said stator bottom according to a radius of curvature corresponding to that of the milling cutter used for machining said stator bottom, and tightness and application lips against said rectilinear zones of said stator bottom, and said vane comprises two opposite tightness and application lips having a flat contacting portion, said base of said vane presenting a cylindric contacting generatrix, said flat contacting portion of said lips and said cylindric contacting generatrix of said base being in one and the same plane.

4,425,089

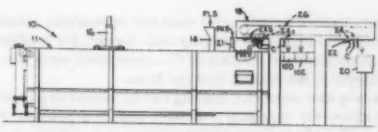
APPARATUS FOR EXTRACTING FROZEN CONFECTIONS

Ronald J. Billett, Sunnyvale, Calif.; David N. Anderson, and William M. Easter, both of Lakeland, Fla., assignors to FMC Corporation, Chicago, Ill.

Division of Ser. No. 146,814, May 5, 1980, abandoned. This application Jul. 12, 1982, Ser. No. 397,619

Int. Cl.³ B29C *7/00*, *1/00*

U.S. Cl. 425—438 **12 Claims**



1. An apparatus for removing frozen confections from the mold cups of a mold member in which the frozen confections are formed, said frozen confections each including a stick projecting upwardly therefrom, said apparatus comprising a plurality of gripper units, each gripper unit including means for releasably engaging a stick of a frozen confection within a mold cup; a cross member extending above said mold member at an extraction area, said gripper units being mounted to said cross member in alignment with the sticks of the confections; a separate spring interposed between each gripper unit and the cross member to individually and separately bias the gripper units upwardly relative to the mold member; means, supporting said cross member at said extraction area, for causing said gripper units to releasably engage said sticks; means for forcing said cross member upwardly to a selected height above the mold member after said sticks have been engaged by the respective gripper units to cause the springs to individually bias the gripper units upwardly; said height being insufficient to effect complete removal of the confection from the mold, and means at said extraction area for heating the exterior surfaces of the mold cups to melt the surface layers of the frozen confections within the mold cups, said separate springs acting on said gripper units to raise each confection from the associated mold cup as soon as the surface layer thereof has been sufficiently melted.

4,425,090

APPARATUS FOR PRODUCING A HEAT-SEALABLE CONTAINER

Gerhard Hansen, Heerstrasse 20, 7166 Sulzbach-Laufen am Kocher, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,170

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033821

Int. Cl.³ B29C *17/07*; B29D *3/00*

U.S. Cl. 425—503 **16 Claims**

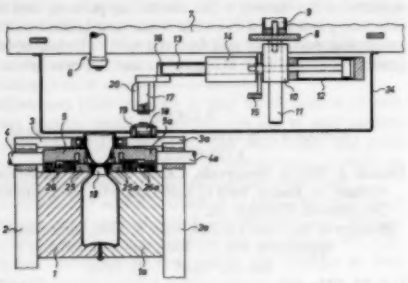
1. An apparatus for forming, filling and closing a container by expanding and shaping a heat-sealable polymeric hose, the apparatus comprising

a container-forming mold with split upper and lower parts,

and a mold-holding fixture for each of the upper mold parts movable in opposite directions;

means movable at least vertically inside the hose for releasably holding a rubber stopper;

a cross slide for supporting said means for holding said stopper for horizontal movement relative to said mold; and



means, carried on said cross slide and operatively associated with said means for holding said stopper, for establishing a predetermined position of the upper mold parts after said stopper is introduced into the hose;

whereby said means for holding can be moved to a receiving position for engaging a stopper and to a position in the hose for placing the stopper therein.

4,425,091

MOLDING MACHINE

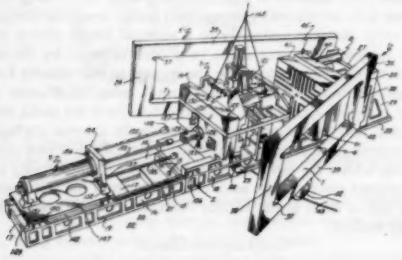
Edgar D. Prince, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Division of Ser. No. 199,066, Oct. 20, 1980, Pat. No. 4,345,893. This application Dec. 7, 1981, Ser. No. 328,116

The portion of the term of this patent subsequent to Mar. 24, 1999, has been disclaimed.

Int. Cl.³ B29F 1/06

U.S. Cl. 425—589 **16 Claims**



1. A molding machine, comprising:

a base adapted to support thereon a two-part die having mating halves;

first and second platens slideably mounted on said base, and adapted for operable connection with said die;

a ram coupling said platens and for diverging and converging the same between releasing and molding positions; and

means for releasably locking said platens and said die in a closed position during molding, and an open position for releasing a part, comprising a pair of clamping frames connected with opposite sides of said base, and including means defining a closed border sized to receive said platens therein.

7. In a molding machine, the improvement comprising:

an elongate base having an upper support surface;

first and second rails mounted on the upper support surface of said base in a laterally spaced apart, mutually parallel relationship;

a two-part die, comprising first and second die halves, each of said die halves including support pads on opposite sides thereof which mate with said rails, and slideably support said die halves for longitudinal translation along said rails; said support pads being shaped to position said die halves in precise vertical alignment on said rails to insure accurate mating therebetween;

an alignment track extending along the length of said base, and comprising a way and a mating guide disposed in one of said rails and an associated one of said support pads, thereby insuring horizontal alignment between said die halves; the other of said rails and associated support pads being free from obstruction to permit lateral movement therebetween to avoid binding between said rails and said support pads during temperature fluxuation.

13. In a molding machine, the improvement comprising:

a base having an upper support surface;

a two-part die supported on the upper surface of said base, and including a cover half in which a cold chamber is mounted;

a shot cylinder abuttingly and slideably supported on the upper surface of said base for longitudinal movement therealong, and including a plunger;

first and second ties having first ends connected with said shot cylinder at opposite sides of said plunger; said ties having second ends connected with the cover half of said die at opposite sides of said cold chamber; said ties being substantially longitudinally inelastic, whereby reaction forces developed during die injection between said shot cylinder and said die are resisted substantially solely by said ties, such that said shot cylinder need not be fixedly anchored to said base, and can self-adjust longitudinally thereon.

4,425,092

SYSTEM FOR BURNING FINE-GRAINED MATERIAL, PARTICULARLY FOR THE MANUFACTURE OF CEMENT CLINKERS

Kunibert Brachthauser, Bergisch Gladbach, and Horst Herchenbach, Troisdorf, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 63,102, Aug. 2, 1979, Pat. No. 4,298,393. This application Aug. 5, 1981, Ser. No. 290,177

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833744

Int. Cl.³ F27B 7/02

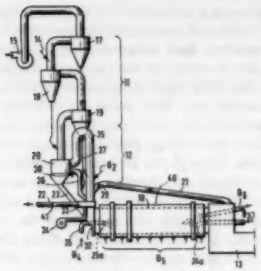
U.S. Cl. 432—106 **25 Claims**

1. In a combustion installation for the production of mineral combustion products such as cement clinkers out of raw meal having a raw meal preheater, a rotary kiln and a clinker cooler, an improvement comprising:

a calciner having an input connected to the output of said preheater and an output connected to the input of said rotary kiln;

fossil fuel burning means operatively connected to said calciner to partly heat and partly calcine the raw meal passing therethrough; and

non-combustion heating means operatively connected to said calciner to provide additional heat to the raw meal



passing therethrough without introducing any additional gases into said calciner.

4,425,093

SPRING ELEMENT FOR ORTHODONTIC PLATES

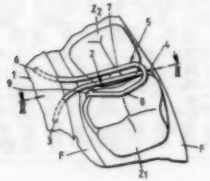
Wilhelm Lorenz, Am Wüllenberg 43, D5277 Marienheide, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,974

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 8114926[U]; Jul. 30, 1981, 8122384[U]

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—149 **5 Claims**



1. A spring element for orthodontic plates for achieving sagittal tooth movements in the region of the side teeth especially distalisations, characterized in that said spring element comprises clamping means with two arms, said clamping means being made of an elastic, but permanently deformable material and including a base part for embedding the same into the plate made of plastic material, and a pair of clamping arms (2, 5) projecting from said base part (3, 6), the first one (2) of said clamping arms being designed as an approximately U-shaped yoke and engaging over the adjacent tooth (Z_2), said U-shaped yoke extending away from said base part (3) and including a first free end (4) while the other one of said arms (5) includes a loop part having one leg (7) extending away from said base part (6) for engaging over an adjacent tooth (Z_2) and a second leg (8) extending towards said base part (6) and having a free end 9 being substantially parallel to and spaced from said free end (4) of said first arm (2), said free ends (4, 9) of the said clamping arms (2, 5) being broadened for engaging the tooth (Z_1) to be shifted.

4,425,094

METHOD OF ROOT CANAL THERAPY

Louis H. Tateosian, York; James R. Royer, Mount Joy, and George T. Eden, York, all of Pa., assignors to Dentsply Research & Development Corporation, Milford, Del.

Filed May 8, 1981, Ser. No. 261,785

Int. Cl.³ A61K *5/01*

U.S. Cl. 433—228 **23 Claims**

15. A method for filling a prepared root canal of a tooth comprising

placing into said canal a solid endodontic point swellable when placed into said canal comprising a hydrophilic, polymeric composition, and

permanently sealing said prepared root canal.

4,425,095

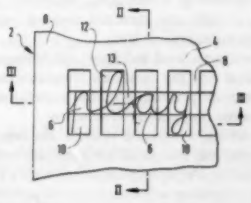
TACTILE WRITING AID

Henry Morris, P.O. Box 9533, Newcastle, 2940, Natal, South Africa

Filed Dec. 7, 1981, Ser. No. 328,487

Int. Cl.³ G09B *21/00*

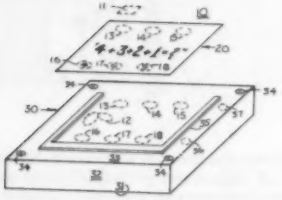
U.S. Cl. 434—117 **4 Claims**



1. A writing aid comprising a contoured surface having a plurality of relatively depressed surface portions and raised ridges or surface regions at least partially surrounding each depressed surface portion at a level differing therefrom by an amount rendering transition between a ridge or region and a depressed portion tangible to a person through a hand-held writing implement traversing the surface, the contoured surface including at least one row of said depressed surface portions corresponding to the body portions of letters to be formed, each depressed surface portion being provided with

two intermediate surface portions adjacent thereto and formed at a level between that of the depressed surface portion and that of said raised ridges or region to correspond to the position of heightwise strokes or looped portions of said letters.

4,425,096
TEACHING TOOL WITH RF SWITCHING
William O. Schwake, 1133 W. First, Sulphur, Okla. 73086
Filed Sep. 24, 1982, Ser. No. 422,760
Int. Cl.³ G09B *23/02, 7/00*
U.S. Cl. 434—201 **6 Claims**



1. An rf switching apparatus for the production of digital logic electronic HIGH and LOW signals characterized as comprising:

means for containing at least one rf switching apparatus within a box that is at least in part transparent to radio waves so as to form at least one rf window and wherein conventional digital logic electronic chips and discrete components may be positioned internally so as to be protected from the external environment;

means for providing electrical power with a positive bus terminal and a negative bus terminal suitable for the operation of digital logic electronic chips and discrete components within the containment box;

means for mounting as oscillator transistor having a base terminal, a collector terminal and an emitter terminal within the containment box;

means for mounting a switching transistor having a base terminal, a collector terminal and an emitter terminal within the containment box;

means for wiring a load inductor coil between the positive bus terminal and the oscillator transistor collector terminal in a manner providing spatial association between the load inductor coil and an rf window;

means for wiring a variable resistor between the negative bus terminal and the oscillator transistor emitter terminal;

means for wiring a coupling capacitor with a first lead to the oscillator transistor collector terminal and forming a diode node with the coupling capacitor second lead;

means for wiring a first rectifier diode between the negative bus terminal and the diode node;

means for wiring a first biasing resistor and a first biasing capacitor in parallel between the negative bus terminal and the oscillator transistor base terminal;

means for wiring a second biasing resistor and a second biasing capacitor in parallel between the positive bus terminal and the oscillator transistor base terminal;

means for wiring a time constant capacitor and a time constant resistor in parallel between the negative bus terminal and the switching transistor base terminal;

means for wiring the switching transistor emitter terminal to the negative bus;

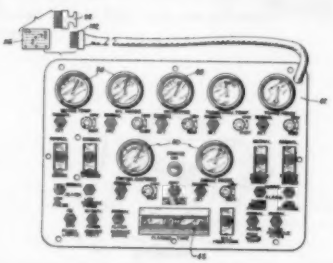
means for wiring a second rectifier diode between the diode node and the switching transistor base terminal;

means for wiring a load resistor between the positive bus and the switching transistor collector lead;

means for wiring a digital logic signal lead to the switching transistor collector terminal; and

means for placing a substance for absorbing radio frequency energy in external spatial association with the rf window and the internal load inductor coil so as to absorbingly deny feedback energy to the oscillator transistor collector terminal and thus deny the generation of electrical alternating current and thus deny the delivery of electrical direct current to the switching transistor base collector so that positive bus voltage passing through the load resistor can not pass through the switching transistor to the negative bus terminal and therefor builds up as a digital logic electronic HIGH signal on the signal lead and, when the rf absorbing substance is removed from the vicinity of the load inductor coil the feedback produces alternating current which is altered into direct current which activates the switching transistor so that positive bus voltage passing through the load resistor coil can pass through the switching transistor to the negative bus terminal and thus produce a digital logic electronic LOW signal on the signal lead.

4,425,097
APPARATUS FOR TRAINING EQUIPMENT OPERATORS
Lawrence L. Owens, 9434 Domer Rd., Santee, Calif. 92071
Filed Sep. 8, 1981, Ser. No. 300,360
Int. Cl.³ G09B *19/16*
U.S. Cl. 434—219 **10 Claims**



1. An equipment operator training aid for use with a piece of equipment having operation systems and function indicators, said training aid comprising:

(a) a control unit which is portable and releasible and can be carried away from a particular piece of equipment on which it is being used after use;

(b) adapter means adapting at least one ofr said indicators to be overridden and controlled by an external input;

(c) a converter cable having a separable junction between said control unit and said adapter means, whereby an instructor operating said control unit can cause an indicator so adapted to indicate an abnormal condition to check trainee cue recognition and response; and,

(d) including a terminal plug for use with the portion of said junction connected to said adaptor means whereby circuits can be opened in the electrical circuit of said equipment to divert circuit control to said control box, and appropriate connections can be made by said plug when

said control box is not in use to permit normal operation of said equipment when not being used in training.

4,425,098

SOUND-ILLUSTRATED, BOUND BOOK

Erich Döring, Im Hölzli, 9442 Berneck, Switzerland

Filed Aug. 13, 1982, Ser. No. 407,941

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 8124507[U]

Int. Cl.³ G09B *5/06*; B42D *1/00*; G11B *23/44, 25/04*

U.S. Cl. 434—317 **18 Claims**

1. A sound-illustrated, bound book, comprising sound record areas in the form of a spiral sound groove each and, associated with individual printed book pages, and adjuster elements associated with the sound groove for a sound reproducing apparatus attachable in aligned position for interaction with said adjuster elements by adjuster matching elements provided at its underside,

wherein the sound grooves with the adjuster elements are provided on separate sound record double pages of plastic material bound in the book and inserted into the quaternia thereof and the adjuster elements are arranged symmetrically with respect to a central axis of the sound grooves.

4,425,099

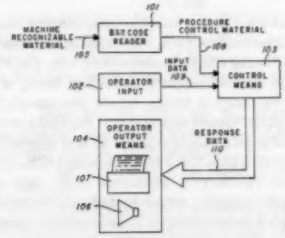
EDUCATIONAL AID FOR USE WITH WORKBOOK

Rex A. Naden, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 13, 1981, Ser. No. 310,599

Int. Cl.³ G09B *7/00*

U.S. Cl. 434—335 **33 Claims**



1. An educational aid to be used in conjunction with sheets having recorded both operator recognizable material and machine recognizable material thereon, the educational aid comprising:

a. means for reading the machine recognizable material and generating procedure control data thereform;

b. operator input means for generating operator input data;

c. means for holding a sheet positioned so that at least a portion of the sheet so held overlays at least a portion of said operator input means;

d. output means for generating signals perceivable by an operator; and

e. control means for utilizing the procedure control data in relation to said operator input data and for generating response data therefrom, said control means communicating said response data to said output means.

4,425,100

APPARATUS FOR MANUFACTURING A BULB

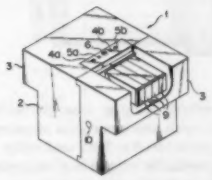
Isao Shiraishi, Yokosuka, and Yukio Asou, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 20, 1981, Ser. No. 294,556

Claims priority, application Japan, Aug. 29, 1980, 55-119292

Int. Cl.³ H01J *9/18*

U.S. Cl. 445—67 **7 Claims**



1. An apparatus for manufacturing a bulb including a plurality of filaments, and a plurality of pairs of lead-in wires arranged to bear said filaments, each said pair of lead-in wires bearing one of said filaments, comprising:

a mount head including at least first and second pairs of alternately formed lead-in wire holes, a first support mechanism capable of holding lead-in wires inserted in said first pair of lead-in wire holes, and a second support mechanism capable of holding lead-in wires inserted in said second pair of lead-in wire holes;

means for removably supporting said mount head;

driving means for selectively driving said first and second mechanisms to hold the lead-in wires at predetermined positions relative to said mount head;

locating means on which one end of each lead-in wire inserted in each said lead-in wire hole of said mount head abuts, whereby the position of said one end relative to said mount head is defined; and

operating means capable of engaging the lead-in wires inserted in said first pair of lead-in wires to move said lead-in wires axially toward said mount head.

4,425,101

ANGULARLY MOVABLE UNIVERSAL JOINT

Werner Krude, Siegburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,793

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048340

Int. Cl.³ F16D *3/22*

U.S. Cl. 464—139 **4 Claims**

1. A universal joint comprising:

an inner joint member;

an outer joint member;

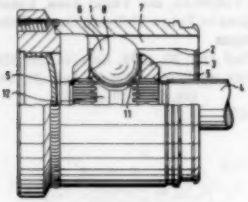
roller members operatively interposed in torque transmitting engagement between said inner and said outer joint members;

grooves in said inner and outer joint members having said roller members in guided engagement therein and configured to effect rotative driving engagement between said inner and outer joint members;

a driven member and a driving member, one of said driven and driving members being in rotative driving engagement with said outer joint member;

torque transmission means connecting the other of said driven and said driving members in torque transmitting engagement with said inner joint member while permitting relative axial movement therebetween;

recess means in the other of said driving and driven members having said roller members engaged therein in a manner to hold said inner joint member and said other member axially fixed relative to each other;



said roller members being at least partially of a spherical configuration with said inner joint member and said recess means being structured to hold said roller members so that they are in mutually supporting engagement with each other radially inwardly of said joint;

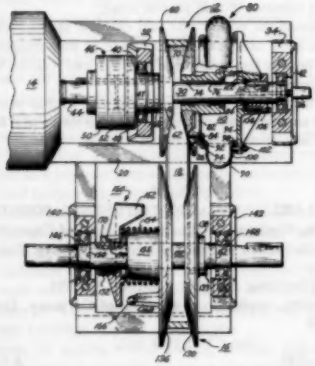
said inner and outer joint members and said driving and driven members, respectively, being structured to permit angular articulation of said joint while retaining the torque transmitting capability thereof.

4,425,102

VARIABLE SPEED BELT DRIVE

Robert O. Huff, and Edward F. Krome, Jr., both of Columbus, Ind., assignors to Reliance Electric Company, Columbus, Ind.

Filed Sep. 26, 1980, Ser. No. 191,316
Int. Cl.³ F16H 55/56
U.S. Cl. 474—28 **25 Claims**



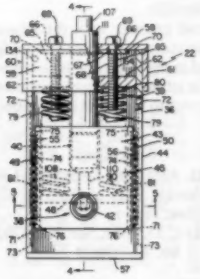
1. A variable speed belt drive comprising a drive sheave having a shaft, an axially moveable flange mounted on said shaft, and a fixed flange, a driven sheave having a shaft, an axially moveable flange mounted on said last mentioned shaft, and a fixed flange, a belt trained on said sheaves, a coupling means having a circumferentially continuous, flexible element concentric with the shaft of said drive sheave connecting said shaft of said drive sheave and the moveable flange of the drive sheave in driving relationship, said coupling means with the flexible element forming a fluid chamber for adjusting the position of the moveable flange of the drive sheave, and said drive shaft having a passage for connecting the chamber to a source of control fluid pressure, a motor having a shaft for driving said drive sheave, a coupling connecting said motor shaft to the shaft of said drive sheave and having a hub to which the fixed flange on said drive sheave is rigidly connected, and a cam means reacting between the moveable flange of said driven sheave and the shaft of said driven sheave for controlling the pitch diameter of said driven sheave in response to variations in the pitch diameter of said drive sheave.

4,425,103

BELT TENSIONER, PART THEREFOR AND METHODS OF MAKING THE SAME

Randy C. Foster, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 301,351, Sep. 11, 1981. This application Jun. 25, 1982, Ser. No. 391,641
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ F16H 7/12
U.S. Cl. 474—138 **20 Claims**



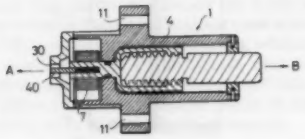
1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and fluid dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, said fluid dampening means comprising a piston and cylinder means, the improvement wherein said mechanical spring means comprises a pair of coiled compression springs with their longitudinal axes disposed in substantially parallel side-by-side spaced relation, said fluid dampening means being generally disposed between said springs and in substantially parallel relation therewith, said belt engaging means and said support means having a tongue and groove means for providing for sliding movement therebetween.

4,425,104

LOCKING MECHANISM IN TENSION PROVIDING DEVICE

Juji Ojima, Ebina, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 7, 1981, Ser. No. 261,667
Claims priority, application Japan, May 8, 1980, 55-63045[U]
Int. Cl.[3] F16H 7/08; F03G 1/10
U.S. Cl. 474—111 1 Claim



1. In a tension providing device comprising:
casing means for defining a chamber;
means having a non-circular opening formed therein for closing one end of said chamber;
a piston having a threaded portion disposed in said chamber and a portion extending through said non-circular opening so that the piston is translatable and non-rotatable with respect to said casing means, an end portion of the piston outside of the casing means forming a tension applying member;
shaft means supported for rotation with respect to said casing means and having a threaded head portion engaged with said threaded portion of said piston and a leg portion extending from the head portion; and
biassing means engaged with said leg portion for exerting a biassing force on said leg portion such that rotation of said leg portion by said biassing means results in translation of said end portion of said piston,
the improvement comprising means for preventing rotation of said leg portion including:
a split groove formed in an end of the leg portion opposite the threaded head portion of said shaft means;
an opening formed in said casing means in alignment with an axis of said leg portion, said opening having a groove extending into a portion of the casing means defining the opening; and
a stopper member insertable through said opening into engagement with said split groove, a portion of said stopper member being received in said groove to thereby prevent rotation of said stopper member whereby said stopper member locks said leg portion.

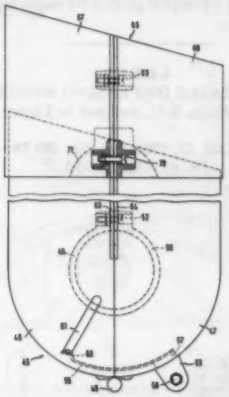
4,425,105

ARRANGEMENT FOR PROTECTING A BELT

Josef Edl; Georg Petz, both of Griesheim, and Rudolf Kling, Darmstadt, all of Fed. Rep. of Germany, assignors to Quick-Rotan Elektromotoren GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 162,039
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925605; Sep. 21, 1979, 2838253
Int. Cl.[3] F16H 7/18; B62J 13/00
U.S. Cl. 474—140 3 Claims

1. A shield arrangement for a power transmitting belt of a drive including a belt pulley having an axis and arranged at a driven side of the drive, the arrangement comprising a cover element arranged to at least partially surround said belt pulley, said cover element having a lower portion and including a pair of half shells having a substantially U-shaped cross section and interconnected by a hinge, mounting means attached to said cover element for mounting said cover element in fixed relation to said axis, a hood element arranged on said cover element and adjustable relative to the latter in a direction normal to the axis of the belt pulley, and a belt falling off preventing means comprising a strip-shaped member having first and second ends and extending in the interior of said cover element substantially in the circumferential direction of the belt pulley, said first end being connected to a swinging arm which is supported at the lower portion of said cover element for rotation about an axis parallel to the axis of the belt pulley and



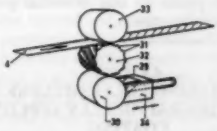
which is adapted to be fixed in a selected rotary position relative to said cover element, to thereby allow adjustment of said second end in a substantially radial direction with respect to the axis of the belt pulley for accommodating various pulley sizes.

4,425,106

PRODUCTION OF CIGARETTE FILTER UNITS

Serge Boegli, Zürich, and Jean-Pierre Lebet, Montreux, both of Switzerland, assignors to F. J. Burrus & Co., Boncourt and Baumgartner Papier SA, Crissier, both of, Switzerland

Division of Ser. No. 892,086, Mar. 31, 1978, Pat. No. 4,281,591.
This application Oct. 16, 1980, Ser. No. 197,504
Claims priority, application Switzerland, Apr. 4, 1977, 4178/77
Int. Cl.[1] A24C 5/50
U.S. Cl. 493—45 2 Claims



1. In an apparatus for producing a cigarette filter unit with the aid of a porous and continuously supplied covering strip transported in a moving direction, so as to produce a filter strand, the covering strip being at least partially wrapped around said filter strand, and cutting means for cutting the filter strand into a multiplicity of units, each of said units constituting said filter unit,
the improvement comprising:
applicator roller means disposed adjacent said covering strip and including adhesive substance receptor means disposed on the circumference of said applicator roller means for applying an adhesive substance to said covering strip along a plurality of approximately equispaced coating tracks, said applicator roller means being arranged to orient each coating track so that it forms a predetermined

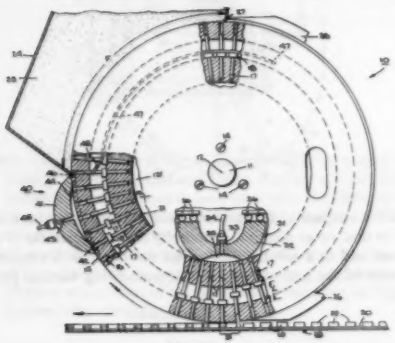
angle with said moving direction, and so that said adhesive substance will be applied on at least three locations separated from one another along a line at right angles to the moving direction of said covering strip, said adhesive substance receptor means including a plurality of transfer ribs, each of said transfer ribs including a transfer surface provided with a receptor groove for receiving said adhesive substance.

4,425,107

ROTATABLE DISPENSING WHEEL

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Filed Jul. 22, 1981, Ser. No. 285,784
Int. Cl.³ A24C *5/50*
U.S. Cl. 493—48 **21 Claims**



1. A rotatable wheel having a plurality of peripheral chambers for receiving granular material, a plurality of pistons slidably mounted in respective chambers for movement between a retracted position to permit filling of each said chamber with granular material and an expelled position to eject the granular material from each said chamber, pneumatic means for pneumatically moving said pistons sequentially outwardly from said retracted position to said expelled position at a dispensing station, said pneumatic means including a shoe having an internal passageway for connection to a pressurized source of air and a cavity in communication with said passageway and in aligned relation with at least one of said pistons, and means for returning each piston to said retracted position downstream of said dispensing station.

4,425,108

METHOD OF MAKING POLYETHYLENE SHIPPING SACK WITH FLEXOGRAPHICALLY APPLIED BARRIER COATING

Ray E. Harrison, Brampton, and Charles R. Murray, Toronto, both of Canada, assignors to C-I-L Inc., North York, Canada

Filed Apr. 7, 1981, Ser. No. 251,755
Claims priority, application Canada, Jan. 12, 1981, 368289
Int. Cl.³ B31B *49/04*
U.S. Cl. 493—220 **8 Claims**

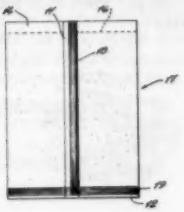
1. A process for making bags, sacks and like containers having an internal barrier coating comprising:

(a) treating one surface of a length of polyethylene film adapted to be folded and heat sealed to make a bag, so as to make said surface receptive to printing inks;

(b) to the treated surface except portions thereof which are to be heat sealed, flexographically applying a layer of a lacquer comprising a solution of a nylon resin in at least one alcohol selected from the C1–C5 aliphatic alcohols and mixtures of at least one of said alcohols with up to 15% by weight of water;

(c) drying the applied lacquer and folding opposite sides of the length of now coated polyethylene film inwardly of the nylon coating until the edge portions overlap one another;

(d) heat sealing the overlapping portions together along the length of the overlapping region; and



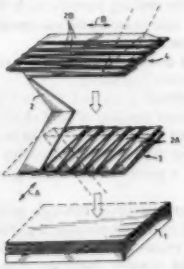
(e) heat sealing one of the two open ends transversely of the folded length of film, the other end being left open but being heat sealable.

4,425,109

METHOD OF PILING AND A TRANSPORT STORAGE PILE FORMED OF RIBBON

Pentti J. Konsti, and Antti L. Nurmi, both of Nokia, Finland, assignors to OY Nokia AB, Helsinki, Finland

Filed Dec. 1, 1981, Ser. No. 326,179
Claims priority, application Finland, Dec. 9, 1980, 803819
Int. Cl.³ B65H *45/20*
U.S. Cl. 493—410 **8 Claims**



1. A method of piling a continuous rubber or plastics mixture material ribbon on a support having a predetermined length and width for transporting and storage comprising the steps of forming a first layer of material produced by folding said ribbon back and forth along substantially the entire length of said support to form a plurality of adjacent folds with the fold lines where the ribbon is bent back over upon its self running substantially parallel to the width dimension of the support, causing each successive fold to overlap a preceding adjacent fold by at least ½ of the ribbon width throughout the length of each fold across substantially the entire width of said support, forming a second layer of material on said first layer of material by folding said ribbon back and forth across substantially the entire width of said support to form a plurality of adjacent folds with the fold lines of the ribbon in the second layer running substantially parallel to the length dimension of the support, and causing each successive fold to overlap a preceding fold in said second layer by at least ½ of the ribbon width throughout the length of each fold across substantially the entire length of said support.

5. A transport and storage pile formed by folding a continuous rubber or plastics mixture ribbon material comprising a support having a predetermined length and width, a plurality

of superimposed folded ribbon layers of said material on said support, a first one of said layers of material being formed by folding said ribbon back and forth along substantially the entire length of said support to form a plurality of adjacent folds with the fold lines where the ribbon is bent back over upon itself running substantially parallel to the width dimension of the support, each successive fold overlapping a preceding adjacent fold by at least ½ of the ribbon width throughout the length of each fold across substantially the entire width of said support, a second one of said layers being formed by folding said ribbon back and forth across substantially the entire width of said support to form a plurality of adjacent folds with the fold lines of the ribbon in the second layer running substantially parallel to the length dimension of the support, each successive fold overlapping a preceding fold in said second layer by at least ½ of the ribbon width throughout the length of each fold across substantially the entire length of said support.

4,425,110

DRIVE ARRANGEMENT FOR A FOLDING DEVICE

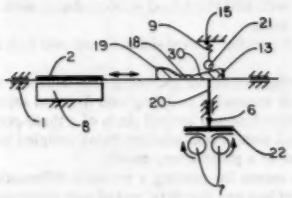
Christian Grüger, Bennewitz; Reinhold Freistedt, Rückmarsdorf, and Richard Thiele, Eythra, all of German Democratic Rep., assignors to VEB Polygraph Leipzig, Kombinat für Polygraphische Maschinen und Ausrüstungen, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 48,356, Jun. 14, 1979, abandoned. This application Jun. 6, 1980, Ser. No. 157,633

Claims priority, application German Democratic Rep., Jun. 22, 1978, 206201

Int. Cl.³ B65H *45/18*

U.S. Cl. 493—444 **7 Claims**



1. In a drive arrangement for a folding device, a combination comprising a frame, a pair of rotatable parallel folding rollers, said rollers being positioned beneath a sheet material to be folded to support the latter and spaced one from another to define a gap therebetween; at least one folding blade; a linear electric motor including a primary stationary part and a secondary part, said secondary part being periodically movable in two opposite directions relative to said primary part by a motive force generated upon energization of said linear electric motor; and transmission means coupled immediately with said secondary part and connected to said folding blade so that said transmission means are moved by said secondary part to provide a reciprocating movement of said blade into and out of contact with the sheet material to push the material into said gap, said transmission means include a cam element connected to said secondary part, a contact roller mounted on said frame and arranged in contact with said cam element, said cam element being concavely curved, and a ram element having one end and another end and coupled to said contact roller with one end thereof and to said folding blade with another end thereof.

4,425,111

METHOD AND MACHINE FOR MANUFACTURING A MULTIPLICITY OF LINKED FILING POCKETS

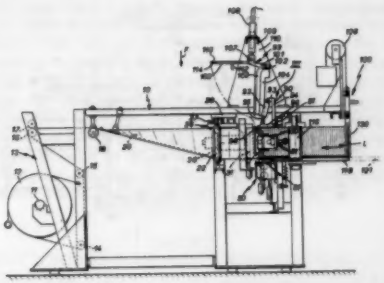
Andre Chazelas, 78250 Meulan, Oinville, France

Filed Mar. 17, 1981, Ser. No. 244,726

Claims priority, application France, Mar. 31, 1980, 80 07140

Int. Cl.³ B31D *3/02*

U.S. Cl. 493—918 **22 Claims**



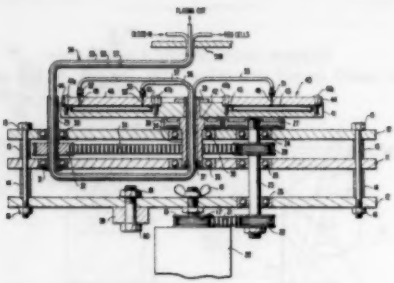
1. A method for manufacturing a multiplicity of linked pockets for making up expanding files of the type comprising parallel partitions and pleated flexible material joining the partitions along three sides thereof, said method comprising the steps of: (a) providing precut partitions with folded tabs along at least two sides, and the folded tabs having glue thereon; (b) providing a flat web of flexible material; (c) gradually longitudinally folding the web of flexible material into a substantially U-shaped channel; (d) advancing a predetermined length of the U-shaped channel corresponding to the desired maximum unfolded distance between a pair of partitions; (e) inserting one of said partitions at the rear of the advanced length of the U-shaped channel perpendicularly to the longitudinal axis of the channel; (f) forming a central fold along the three sides of the advanced length inwardly of the corresponding edges of the partition; (g) longitudinally compressing the central fold thus formed to bond the partition folded tabs to the corresponding folded material; and (h) repeating steps (d) through (g) to form a multiplicity of linked pockets.

5. A machine for manufacturing a multiplicity of linked pockets for making up expanding files having a plurality of parallel partitions with folded and glue carrying tabs along at least two sides thereof and pleated flexible material joining consecutive partitions along three sides thereof, said machine comprising, from rear to front, means for supporting a spool of flexible material in web form, a member for gradually folding flexible material into a substantially U-shaped channel having three sides as said flexible material is moved forwardly along a path past said member, means for advancing a predetermined length of the flexible material U-shaped channel corresponding to a preselected maximum unfolded distance between a pair of adjacent partitions, means for positioning a partition at the rear of the advanced length of the flexible material U-shaped channel, means disposed along the three sides of the advanced length of the flexible material U-shaped channel for forming a central fold along the three sides of the advanced length of the flexible material U-shaped channel inwardly of the corresponding edges of adjacent ones of said partitions, means for longitudinally compressing the folded advanced length of the flexible material U-shaped channel to bond the folded and glue carrying tabs of the partition to portions of folded advanced length of the flexible material U-shaped channel, restraining means for restraining a multiplicity of linked pockets during the formation of a central fold, and means for braking forward motion of the multiplicity of linked pockets.

4,425,112
FLOW-THROUGH CENTRIFUGE

Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 25, 1976, Ser. No. 661,114
Int. Cl.³ B04B 9/00
U.S. Cl. 494—18 13 Claims

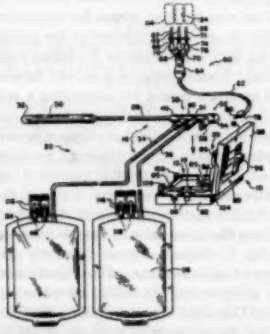


1. A flow-through centrifuge having a central axis of rotation and comprising a centrifuge bowl rotatable about said central axis; at least one inlet tube and at least one flexible outlet tube, one end of each of said tubes being connected to said bowl and being rotatable therewith for providing fluid communication therewith; a bundle forming a partial loop and composed of said tubes extending radially outwardly from the vicinity of said central axis, along a path radially displaced from said central axis and thence to a point along said central axis; means for nonrotatably securing said tubes constituting said bundle at said point; and means for simultaneously rotating said bundle about said central axis at a velocity of ω, said bowl about said central axis at a velocity of 2ω and said bundle about its own axis at a velocity of $-\omega$, whereby the centrifuge can operate free of rotating seals and without twisting the inlet and outlet tubes.

4,425,113
FLOW CONTROL MECHANISM FOR A PLASMASPHERESIS ASSEMBLY OR THE LIKE

Arnold C. Bilstad, Deerfield, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 21, 1982, Ser. No. 390,463
Int. Cl.³ A61M 5/00, 1/03
U.S. Cl. 604—6 38 Claims

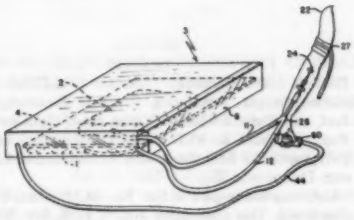


1. A flow control device for a flexible conduit comprising
a first member,
means for releasably securing a length of flexible conduit on said first member,
a second member including a housing and a platen movably mounted on said housing,
means for mounting said second member housing in an operative position on said first member, in which position the secured conduit is disposed between said first member and said movable platen of said second member, and
means on said movable platen operative, in response to displacement of said movable platen when said second member housing is in said operative position, for selectively pinching close the secured conduit between said movable platen and said first member.

4,425,114
BLOOD DONATION UNIT

Donald W. Schoendorfer, Brookline; Richard M. Lueptow, Quincy, and Jonathan D. Schiff, Boston, all of Mass., assignors to Haemonetics Corporation, Braintree, Mass.

Filed Apr. 23, 1981, Ser. No. 256,694
Int. Cl.³ A61M 5/00
U.S. Cl. 604—7 22 Claims



1. A blood collection apparatus comprising:
(a) a first flexible bag for receiving a first fluid which is a mixture of a second and third fluid;
(b) a second flexible bag containing said second fluid to be mixed with said third fluid in accordance with a predetermined ratio;
(c) a rigid member interposed between said first and second bags;
(d) an airtight chamber enclosing said bags and member;
(e) conduit means for coupling said first and second bags to respective first and second ports of a three-port junction, the third port of said junction being coupled to the proximal end of a phlebotomy needle;
(f) pump means for causing a pressure differential between said first bag and the distal end of said phlebotomy needle whereby when the distal end of said phlebotomy needle is coupled to a source of third fluid, said first bag is caused to begin to fill with fluid and displace the rigid member which causes the second fluid in the second bag to begin emptying and flowing to said junction where it mixes with the third fluid and passes to the first bag.

4,425,115
ULTRASONIC RESONANT VIBRATOR

David G. Wuchinich, 116 Pinehurst Ave., New York, N.Y. 10033

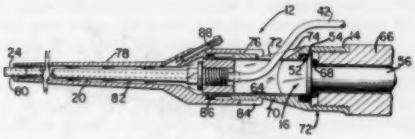
Continuation-in-part of Ser. No. 861,599, Dec. 19, 1977, Pat. No. 4,223,676, which is a continuation of Ser. No. 672,814, Apr. 1, 1976, Pat. No. 4,063,557. This application Apr. 21, 1978, Ser. No. 898,569
Int. Cl.³ A61M 1/00
U.S. Cl. 604—22 3 Claims

1. An ultrasonic resonant vibrator comprising:
an ultrasonic vibration transducer for external electrical excitation to vibrate; at an ultrasonic frequency;
a tool having a free end for output ultrasonic vibration;
connecting means connecting the transducer to the tool for ultrasonically vibrating the tool with the vibrations from the transducer at the resonant frequency of the resonant

vibrator, the connecting means having a slot bifurcating the connecting means; and

mounting means spaced from the slot toward the transducer for supporting the resonant vibrator;

the combination of the transducer, connecting means, tool and mounting means defining the resonant vibrator and having the first node of the ultrasonic resonant vibrations from and including the mounting means toward the slot



positioned away from the mounting means toward the slot,

wherein said first node is positioned at a point where the gain in ultrasonic vibration at the end of the tool from positioning the first node toward the slot most exceeds the loss of ultrasonic vibration at the end of the tool from damping the vibration with the support of the resonant vibrator at the mounting means.

4,425,116

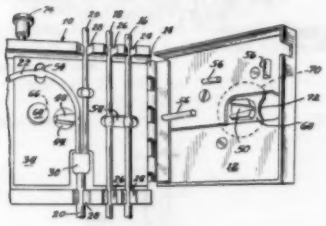
CONTROL SYSTEM FOR FLUID FLOW APPARATUS

Arnold C. Bilstad, Deerfield, and Richard I. Brown, Northbrook, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 139,884, Apr. 14, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 347,819

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—34 **29 Claims**



1. (Once Amended). A device for controlling the flow of fluid through flexible collapsible conduit means, said device comprising

a housing [having] *including* spaced [walls] *sidewalls* defining an interior area *having an access opening, an interior wall extending in said interior area having a front surface facing said access opening and a rear surface facing away from said access opening, slot means for releasably securing* [accommodating the mounting of] a portion of the conduit means *in a predetermined configuration along said front interior wall surface*, and [including] a door movable between an open position permitting access *through said access opening* into said interior area *to secure the condiut means on said slot means or to remove the conduit means from said slot means* and a closed position blocking said access opening and sandwiching the secured conduit means between said front interior wall surface and the interior of said door,

fluid control means carried [within] *along said rear surface of* said interior [area] *wall* and being [operatively] movable through a range of positions *and operative, when said door is in said closed position*, for [controlling the flow of fluid through] *selectively pressing against and collapsing* the conduit means *secured in said predetermined configuration along said front surface of said interior wall, thereby effecting the flow of fluid through the conduit means*,

control handle means carried [by] *on the exterior of* said door and being operative for movement through a range of positions generally correlated with said range of positions of said fluid control means, and

linkage means operative, when said fluid control means and said control handle means are each respectively positioned at generally the same relative correlated position within said respective range of positions, for releasable connecting said control handle means with said fluid control means in response to movement of said door into said closed position and, after said releasable connection has been made and said door is maintained in said closed position, for moving said fluid control means through its range of positions in response to and in relative correlation with movement of said control handle means through its range of positions.

4,425,117

DEVICE FOR THE RELEASE OF SUBSTANCES AT DEFINED LOCATIONS IN THE ALIMENTARY TRACT

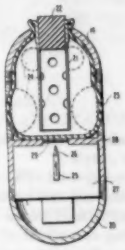
Berhhard Hugemann, Frankfurt am Main, and Otto Schuster, Bad Soden, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 167,845, Jul. 14, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 326,825

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 3928477

Int. Cl.³ A61M *31/00*

U.S. Cl. 604—93 **5 Claims**



1. A device for the release of a substance at a defined or desired location in the alimentary tract, comprising:

(i) a capsule having a separating wall therein, the wall being aligned approximately perpendicular to the longitudinal axis of the capsule, the wall forming a first chamber and a second chamber in the capsule, at least one hole or slot being present in the capsule in the region of the first chamber,

(ii) a body that is positioned in the second chamber, the body having a longitudinal passageway therethrough which is approximately aligned with the longitudinal axis of the capsule,

(iii) a compression spring that is in a compressed state and is located on the end of the body facing the separating wall,

(iv) a needle that is mounted on the compression spring, extending out beyond the compression spring, and is aligned with the longitudinal axis of the capsule, having its pointed end facing the separating wall,

(v) a resonant circuit that is located in the second chamber and that is tuned to a electromagnetic field of high frequency, the resonant circuit comprising (a) a coupling coil that is positioned around the body, one end of the coil extending away from the first chamber, (b) a capacitor, one side of the capacitor being connected to the other end

of the coil, the other side of the capacitor extending away from the first chamber, and (c) a resistance wire attached to the end of the coupling coil and the side of the capacitor which extend away from the first chamber,

(vi) a fuse wire that is connected to the compression spring, extends through the longitudinal passageway of the body and is connected to the end of the body facing away from the first chamber, the fuse wire being in contact with the resistance wire, and

(vii) a balloon in the expanded state that is positioned in the first chamber, substantially all of the surface of the balloon being in contact with the first chamber,

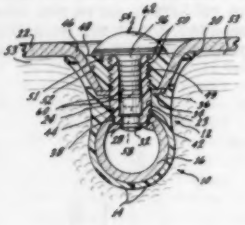
whereby, when the device is subjected to an external electromagnetic field having the high frequency to which the resonant circuit is tuned, the fuse wire heats up and breaks, and the compressed spring is released pushing the point of the needle through the separating wall and the balloon, which bursts, thereby releasing any substance contained in the first chamber.

4,425,118

CATHETER ADVANCEMENT AND PLACEMENT UNIT

James W. Baumbach, 11554 Encino Ave., Granada Hills, Calif. 91344

Filed Aug. 30, 1982, Ser. No. 412,704
Int. Cl.³ A61M 5/00
U.S. Cl. 604—164 **13 Claims**



1. A catheter placement unit comprised of a catheter removably engaged over a stylet;

the stylet being comprised of a tubular needle sharpened at its forward distal end and carried at its base end by a hub with a forwardly faced flange and a rearward extension,

the catheter being comprised of a tubular sleeve slideably engageable over the stylet needle and having a hub with a rearwardly disposed face opposed to the forwardly faced flange of the stylet,

there being lever means with a fulcrum at a side of the unit and engaged between the forwardly faced flange of the stylet hub and the rearwardly disposed face of the catheter hub and manually operable into stopped engagement with said rearward extension to shift the catheter into coextensive placement over the stylet needle and point thereof.

4,425,119

IMPLANTABLE DEVICE FOR INTRAVASCULAR ACCESS

Rickey T. Berglund, 2275-68 Caminito Pescado, San Diego, Calif. 92107

Filed Jan. 25, 1982, Ser. No. 342,113
Int. Cl.³ A61M 5/00
U.S. Cl. 604—175 **21 Claims**

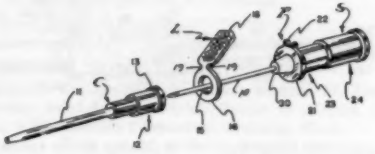
9. A device for providing access to a blood vessel of a living organism through the skin of said organism, comprising:

a core section having a first terminus adapted for insertion through an aperture in the wall of a selected blood vessel, a second terminus adapted for protrusion through an incision in said skin, and passage means extending between said termini;

first attachment means for attaching said core section to said blood vessel;

second attachment means for attaching said core section to said skin and to tissues underlying said skin;

valving means, in said passage means, adapted for axial movement between a first position which seals said passage means and a second position which allows fluid communication between said passage means and the interior of said blood vessel when said first terminus is inserted into said blood vessel;



load-distributing means connected to said core section and adapted to at least partially encircle the blood vessel to distribute stresses suffered by said blood vessel as a result of the movement of said valving means;

means for selectively sealing said passage means from the second terminus; and

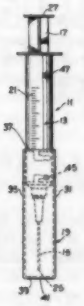
said lead distributing means including a tubular member shaped and dimensioned substantially to encompass and to engage said blood vessel.

4,425,120

SHIELDED HYPODERMIC SYRINGE

Norma A. Sampson, 1713 Victoria Dr., Fullerton, Calif. 92631, and Earl W. Sampson, 1211 N. Council Ave., Ontario, Calif. 91764

Filed Apr. 15, 1982, Ser. No. 368,692
Int. Cl.³ A61M 5/00
U.S. Cl. 604—198 **13 Claims**



1. A hypodermic syringe comprising:

a barrel adapted to contain a substance to be injected;

means for mounting a hypodermic needle to the barrel with the needle having a passage extending therethrough and terminating in a point;

means for forcing the substance from the barrel through the passage of the needle;

a needle guard;

means for mounting the guard on the barrel for movement relative to said barrel, said mounting means mounting the guard for movement between an extended position in which the guard obstructs access to the point of the needle

and a retracted position in which the guard does not materially obstruct access to the point of the needle, said extended and retracted positions being axially spaced;

said mounting means mounting said guard for movement relative to the barrel along first and second paths when the guard is in the retracted and extended positions, respectively, said first and second paths including first and second generally circumferentially extending regions, respectively;

first means responsive to movement of said guard along said first path when the guard is in the retracted position for releasably locking the guard in the retracted position;

second means responsive to movement of the guard along the second path when the guard is in the extended position to positively lock the guard in the extended position so that the guard cannot be moved to the retracted position in response to axial force on the guard;

said mounting means including a track carried by at least one of said guard and said barrel and track-engaging means carried by the other of said guard and said barrel for defining said first and second paths;

said guard having an internal sleeve with distal and proximal edges and said track is provided on said sleeve, said track including at least first and second track sections opening at the distal and proximal edges, respectively; and

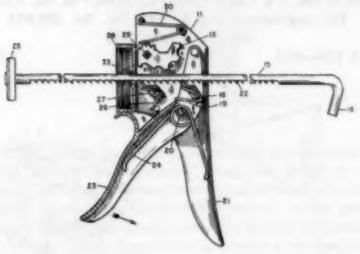
said track-engaging means including first and second track-engaging members mounted on said barrel and adapted to be received in said first and second track sections, respectively.

4,425,121

ADJUSTABLE FEEDING DEVICE FOR THE ADMINISTRATION OF DOSAGES OF GELS AND PASTES TO FARM ANIMALS

William E. Young, Monmouth, and William R. Pasco, Bricktown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 22, 1982, Ser. No. 351,065
Int. Cl.³ A61D 7/00
U.S. Cl. 604—209 **7 Claims**



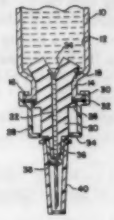
1. An animal-feeding device for orally delivering a plurality of measured doses of gels, pastes or other similar preparations, which may be medicated, comprising: a housing, an externally-attached feed-containing cartridge, an injecting means, a propelling means, and an adjustable dosage regulator wherein said adjustable regulator has a pivotally-attached notched cam, an adjusting knob firmly attached to said pivot and a pivotally-attached spring; the terminal end of said spring can be movably fixed in said cam notches located distally to the longitudinal axis of said injecting means, and cam notches located proximally to said injecting means serving to regulate said propelling means by selectively affecting said propelling means.

4,425,122

PARENTERAL APPARATUS

Milton J. Cohen, 10823 Burbank Dr., Potomac, Md. 20854

Filed Nov. 9, 1981, Ser. No. 319,695
Int. Cl.³ A61M 5/00
U.S. Cl. 604—237 **8 Claims**



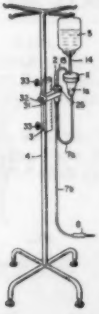
1. In a container for dispensing solutions for parenteral administration having an open end with a constricted neck, a unitary closure and delivery means, fashioned from a resilient, compressible material, comprising an outwardly directed portion extending from the constricted neck, and an inwardly directed portion held in inwardly displaceable sealable relation within said constricted neck, said outwardly directed and extending portion being channeled with an axially directed bore, and said inwardly directed portion being closed by compression of at least one axial bisecting division extending to and communicating with the bore, the opposing surfaces of said bisecting division being normally separated but which, when mated by compressive engagement of the divided parts while held within the neck, form a liquid-impermeable seal, and which, when the member is urged inwardly from the neck into the body of the container, separate to form a patent path of communication with the interior of the container and its contents.

4,425,123

PARENTERAL LIQUID APPLICATION APPARATUS

Francesco Di Salvo, Como, Italy, assignor to Sis-Ter S.p.A., Pignano, Italy

Filed Nov. 30, 1981, Ser. No. 325,777
Claims priority, application Italy, Dec. 30, 1980, 26998 A/80
Int. Cl.³ A61M 5/14
U.S. Cl. 604—247 **11 Claims**



1. Apparatus for the parenteral administration of a liquid at a constant, adjustable flow rate comprising

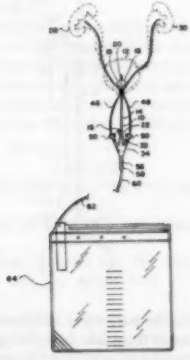
means (**5**, **14**) supplying said liquid by gravity flow;

a dripping tube or funnel (**1a**) defining a dripping chamber in liquid communication with and positioned below said liquid supply means;

support means (**4**) supporting said liquid supply means and said dripping tube or funnel, and positioning said dripping

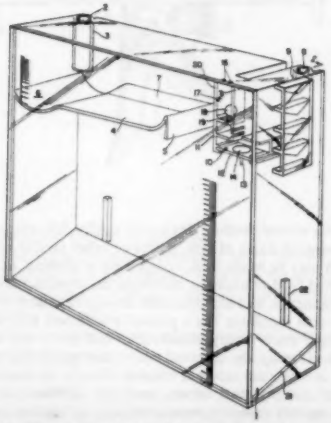
tube or funnel (1*a*) at a predetermined level or elevation;
fluid connection means (7*a*) connected to an outlet of the dripping tube or funnel (1*a*);
a flow stabilization device including
a body (44) formed with a cavity therein, a tubular inlet passage (41) connected to the fluid connection means (7*a*) and thus connecting said cavity with the bottom of said dripping tube or funnel (1*a*), a tubular outlet passage (47) connecting said cavity to a tubing (7*b*), adapted for connection to a cannula (8) for administration of the liquid to a patient, said inlet passage (42) having a smaller diameter than the outlet passage (47),
and a flexible membrane (43) removably covering the opening of the outlet passage (47) within the cavity and closing off said cavity;
a stationary scale (3) vertically positioned at a controlled level with respect to said predetermined level or elevation;
a slider (31) slidable vertically with respect to said stationary scale, said stabilization device being vertically adjustably supported on said slider;
means (32) for securing said slider (31) and hence said stabilization device (2) in vertically adjustable position with respect to said scale, and hence with respect to said predetermined level or elevation of the dripping tube or funnel (1*a*) to permit reproducibly adjustably positioning of said stabilization device at a level below said predetermined level to permit controlled flow from said dripping tube or funnel (1*a*) to and through said stabilization device (2) as a function of level difference between the liquid level in said dripping tube or funnel (1*a*) and said stabilization device (2);
and comprising, in accordance with the invention,
pneumatic connection means (24, 24*a*, 15) connecting the side of the membrane (43) remote from the outlet passage with the dripping tube or funnel to equalize pressure within the dripping tube or funnel and the side of the membrane remote from said tubular outlet passage and thereby compensate for variation in the pressure of liquid supplied through the inlet passage (42) of said device as the liquid level in said supply means changes.

4,425,124
CATHETER ASSEMBLY
Charles E. Womack, 594 Cypress Dr., Florence, Ala. 35630
Filed Apr. 6, 1981, Ser. No. 251,860
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—283 **4 Claims**



1. A bladder and kidney drainage system comprising:
a bladder catheter assembly comprising a flexible outer tube including within it a plurality of flexible lumens, one of said lumens having a retention balloon at one end, and at least one lumen comprising a drainage tube having an entrance end adjacent to said retention balloon and having an opposite, drainage, end;
at least one ureteral catheter comprising a smaller tube than said drainage tube of said bladder catheter assembly, and means for supporting said ureteral catheter on said bladder catheter assembly;
a separate and disconnectable combining chamber comprising:
a generally straight passageway having an entrance opening at one end removably connected to said drainage end of said drainage tube, a single drainage exit comprising a tubular region at an opposite end, and a central region there between,
a pair of tubular coupling members extending outward from sides of said central region, the direction of extension of each having a directional component in the direction of the location of said entrance opening, whereby, with the entrance opening of said central chamber in an upper position, flow through said tubular coupling member enters said central region by virtue of gravity,
a threaded coupling end region on the end of each said tubular coupling member, and
coupling means including a ferrule adapted to surround an end region of a said tube of said ureteral catheter, and a collar adapted to fit around said last-named tube and over said ferrule, and having a threaded interior region adapted to thread onto said threaded coupling end region of said tubular coupling member, and thereby clamp together said last-named tube and said combining chamber;
a drainage bag;
a single elongated drain tube having an entrance end and an exit end, and said exit end being connected to said drainage bag, and having an enlarged tapered said entrance end; and
a coupling sleeve slidably coupled over said enlarged tapered entrance end of said drain tube and over said tubular region of said combining chamber.

4,425,125
TWO-CHAMBER UNDERWATER DRAINAGE APPARATUS WITH ONEWAY OUTFLOW VALVE
Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Long Island, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.
Division of Ser. No. 120,295, Feb. 11, 1980, Pat. No. 4,324,244.
This application Aug. 4, 1981, Ser. No. 289,910
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—321 **6 Claims**



1. A drainage apparatus comprising a container having a pair

of side walls, a pair of end walls, a top wall and a bottom wall, an inlet opening adjacent one end of the top wall, an outlet opening adjacent the opposite end of the top wall, a partition extending from side wall to side wall across a portion of the interior of the container adjacent the upper end thereof to form a chamber above the partition, said partition having a depressed wellshaped end portion means immediately below said inlet opening to provide a waterseal below the inlet, a raised lip on said partition, a tubular extension on said inlet extending downwardly into the well shaped portion of said partition, an outlet chamber disposed within said container beneath said outlet opening, a oneway valve means disposed in a wall of said outlet chamber to permit gas flow from the container through the outlet opening and to prevent reverse gas flow, which valve means opens when the pressure inside the outlet chamber is lower than the pressure in the remainder of said container whereby when said inlet is connected with a body cavity secretions from the cavity fill the chamber above the partition to the height of the raised lip and thereafter overflow into the bottom of the container and said tubular extension and well shaped portion of the partition form an underwater seal to provide an in series seal with the oneway valve between said inlet and said outlet.

4,425,126

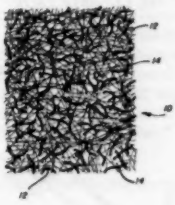
FIBROUS MATERIAL AND METHOD OF MAKING THE SAME USING THERMOPLASTIC SYNTHETIC WOOD PULP FIBERS

George A. M. Butterworth, Western Springs; Robert T. Elias, Downers Grove; Wayne D. Miller, Naperville, and Robert C. Shepherd, Oak Lawn, all of Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 107,945, Dec. 28, 1979, abandoned, which is a continuation of Ser. No. 734,078, Oct. 20, 1976, abandoned. This application Oct. 14, 1980, Ser. No. 196,810

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—366 **48 Claims**



1. A high loft, low density, nonwoven fibrous material containing thermoplastic synthetic wood pulp fibers, as one constituent thereof and fibrous material other than thermoplastic synthetic wood pulp fibers, said synthetic wood pulp fibers having a length and denier generally similar to natural wood pulp fibers, which comprises: a plurality of irregularly arranged, intersecting, overlapping, mechanically interengaged, loosely assembled fibers including both thermoplastic synthetic wood pulp fibers and fibers other than synthetic wood pulp fibers, said fibrous material contains generally in the range of about 10 percent to about 30 percent by weight of said synthetic wood pulp fibers, said other fibers having a melting point above that of the synthetic wood pulp fibers, the general orientation and arrangement of the fibers of said material being substantially the same in all directions across the material and substantially uniform from one boundary surface of the material to the other; segments of said synthetic wood pulp fibers having been heat fused in the absence of pressure at a plurality of junctures with segments of both said synthetic wood pulp fibers and said other fibers to form a self-supporting fibrous web in the absence of any additional binder; and said web having an additional binder distributed therein to bond fiber segments in contact with each other, whereby a stable bonded fibrous material is provided having good wet strength and delamination resistance, with substantially lower density and less shrinkage stiffness, harshness and evidence of web collapse than would be exhibited by a fibrous web formed of said other fibers alone and with its fibers bonded only by said additional binder.

23. In a diaper structure comprising a facing layer, an adsorbent batt and an impervious backing layer in which said facing layer and said backing sheet are outermost layers and said batt is positioned between said facing layer and said backing sheet, the improvement wherein said facing layer comprises the high loft, low density, nonwoven fibrous material of claim 1.

27. A method of producing a high loft, low density, nonwoven fibrous material containing thermoplastic synthetic wood pulp fibers as one constituent thereof and fibrous material other than thermoplastic synthetic wood pulp fibers, said thermoplastic synthetic wood pulp fibers having a length and denier generally similar to natural wood pulp fibers, which comprises:

applying heat in the absence of pressure to a starting layer of irregularly arranged, intersecting, overlapping, mechanically interengaged, loosely assembled fibers including both said synthetic wood pulp fibers and fibers other than synthetic wood pulp fibers, said fibrous material contains generally in the range of about 10 percent to about 30 percent by weight of said synthetic wood pulp fibers, the general orientation and arrangement of the fibers of said material being substantially the same in all directions across the material and substantially uniform from one boundary surface of the material to the other, said other fibers having a melting point, or degradation temperature, above that of the temperature of the synthetic wood pulp fibers, to fuse at least some of said synthetic wood pulp fibers to each other and to some of said other fibers and thereby form a self-supporting fibrous web in the absence of any additional binder which is resistant to web collapse during the subsequent bonding step;

introducing a liquid binder into said fibrous web; and

drying and curing said binder to bond fiber segments in contact with each other throughout the web to form a stable bonded fibrous material of good wet strength, abrasion resistance and delamination resistance with substantially lower density and less shrinkage stiffness and harshness than would be exhibited by a fibrous web formed of said other fibers alone and with its fibers bonded only by said binder.

4,425,127

DISPOSABLE DIAPERS

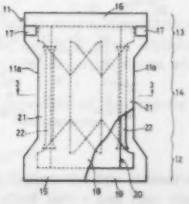
Migaku Suzuki, Kawanoe; Kozo Ochi, Ehime, and Takamitsu Igaue, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Oct. 14, 1981, Ser. No. 311,410

Claims priority, application Japan, Oct. 22, 1980, 55-148009

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—366 **5 Claims**



1. In a disposable diaper having a water-permeable top sheet,

a water-impervious back sheet, a semi-rigid absorbent body primarily composed of fluffed pulp interposed between these two sheets and formed narrower in a crotch area, side flaps extending outwardly from laterally opposite side edges of said absorbent body, and elastic members secured in said side flaps for longitudinally elastic contraction and expansion, the improvement comprising:

(A) said absorbent body comprising a first absorbent member and a second absorbent member, each composed of fluffed pulp,

(1) said first absorbent member

(a) having a generally rectangular configuration and a hydrophobic netty sheet at least covering its bottom surface,

(b) having partially cut out side panels that are separated by an intermediate panel, said side panels being folded inwardly towards each other so that said side panels and said intermediate panel form a folded 3-layer thickness of absorbent material,

(2) said second absorbent member

(a) having a generally rectangular configuration with a width that is greater than the width of said folded 3-layer thickness of absorbent material,

(b) that has at least its top surface covered with a hydrophobic netty sheet, and

(c) that lies upon the top surface of said first absorbent member,

(B) inner and outer side flaps located on each side of said diaper

(1) said inner side flap being composed of the portion of the side of said second absorbent member that extends outwardly from said folded 3-layer thickness of the first absorbent material, said portion including an underlying layer of hydrophobic netty material, and said portion being interposed between said top and back sheets, and

(2) said outer side flap being located outwardly from said inner side flap and being composed of said top and back sheets bonded to each other,

(C) said elastic member located in said side flaps and being in the form of a foamed tape having a length of 10–50 mm and being positioned at a distance of not more than 19.1 mm outwardly from the side of said second absorbent member.

4,425,128

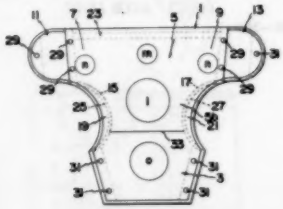
AIR-PERMEABLE AND WATERPROOF DIAPER COVER

Kazuhiko Motomura, Fukuoka, Japan, assignor to Nishiki Co., Ltd., Fukuoda, Japan

Continuation of Ser. No. 110,311, Jan. 8, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,204

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—381 **27 Claims**



1. An air-permeable and waterproof diaper cover comprising a front body part and a rear body part, and two wings attached to one of said body parts, said rear body part comprising at least a section of waterproof and stretching material, said front body part comprising at least a section of air-permeable and water-repellent material, said waterproof and stretching material comprising a knitted fabric coated with a synthetic resin continuous film as a waterproofing agent, said synthetic resin continuous film having elastic properties such that said waterproof and stretching material can be elongated when used as a diaper cover without holes being formed and waterproofing is thereby retained.

4,425,129

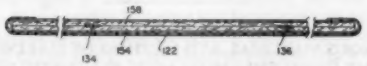
DIAPER WITH CUSHIONED ELASTIC LEG HOLD EDGES

Hamzeh Karami, Tilff, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,295

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—385 **4 Claims**



1. A disposable diaper comprising a backing sheet, a pair of absorbent pads on said backing sheet, a top sheet overlying said absorbent pads, means securing said top sheet to said backing sheet with said pads therebetween, and elasticized strips disposed between said pads.

4,425,130

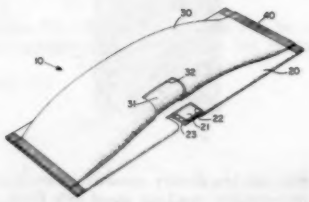
COMPOUND SANITARY NAPKIN

Thomas A. DesMarais, Norwood, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 12, 1981, Ser. No. 273,122

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—389 **24 Claims**



1. A compound sanitary napkin comprising an elongate primary menstrual pad having two oppositely disposed ends and an elongate panty protector having two oppositely disposed ends wherein: (a.) said primary menstrual pad comprises a fibrous absorbent core; (b.) said panty protector comprises an absorbent element and a moisture barrier; and (c.) each of said ends of said primary menstrual pad is firmly affixed to the corresponding end of said panty protector by union means having limited extent in such a manner that there exists a continuous section comprising at least about 75% by length of the common length of said primary menstrual pad and said panty protector which section is uninterrupted by points of attachment between said primary menstrual pad and said panty protector.

4,425,131

METHOD OF IMPROVED PILE APPEARANCE IN LIQUID AMMONIA TREATED FABRIC; PRETREATMENT WITH CREASE RESISTANT RESIN

Harry A. Webb, Menands, and Jackson Lawrence, Troy, both of N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Continuation of Ser. No. 391,609, Jun. 24, 1982, abandoned, which is a continuation of Ser. No. 149,840, May 14, 1980, abandoned, which is a continuation of Ser. No. 17,195, Mar. 5, 1979, abandoned. This application Jul. 15, 1983, Ser. No. 513,949

Int. Cl.³ D06M *1/02, 15/16*

U.S. Cl. 8—115.6 1 Claim

1. The method of effecting liquid ammonia treatment of a pile fabric, said fabric having a base portion having at least a partial content of cotton and having a free standing pile having at least a partial content of cotton, without excessive distortion of the pile fibers during such treatment, which comprises

(a) initially treating at least the pile fibers of said fabric with a durable press resin to impart to said pile fibers about 2% to about 8% of said resin by weight of the fibers being treated,

(b) curing said resin,

(c) thereafter subjecting said fabric to treatment in a liquid ammonia bath,

(d) controlling shrinkage of said fabric in warp and filling directions at least in part by the application of tension to said fabric, and

(e) controlling shrinkage and distortion of said pile fibers by means of said cured durable press resin.

4,425,132

TWO-STAGE PROCESS FOR DYEING KERATIN FIBRES

Jean F. Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

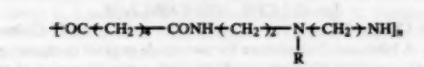
Filed Apr. 5, 1979, Ser. No. 27,381

Claims priority, application France, Apr. 6, 1978, 78 10277

Int. Cl.³ A61K *7/13, 9/12;* D06P *3/14*

U.S. Cl. 8—405 31 Claims

1. Process for dyeing keratin fibres, which comprises treating the fibres with a first composition having a pH from 7 to 13, and subsequently, without any intermediate rinsing, treating the said fibres with a second composition having a pH which is less than 8 which contains a direct dyestuff which is a nitrobenzene dyestuff, anthraquinone dyestuff, triphenylmethane dyestuff, azo dyestuff, metallised dyestuff, xanthene dyestuff, acridine dyestuff or a polymeric dyestuff of the formula



wherein R represents H or an anthraquinone dyestuff and n represents an integer from 2 to 20 and mixtures thereof.

4,425,133

USE OF 1:2 CHROMIUM OF COBALT COMPLEX DYES FOR DYEING LEATHER OR FURS

Alois Püntener, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

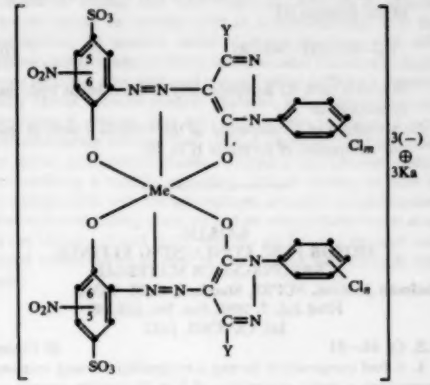
Filed Mar. 19, 1982, Ser. No. 359,734

Claims priority, application Switzerland, Mar. 23, 1981, 1952/81

Int. Cl.³ C09B *45/14;* D06P *3/32*

U.S. Cl. 8—437 7 Claims

1. A method for dyeing leather or furs, comprising the step of applying thereto a dye composition whose active dyeing ingredient consists essentially of a dye of the formula



in which Me is chromium or cobalt, $Ka^{\oplus}$ is a cation, m is 1 or 2, n is 0, 1 or 2 and Y is methyl, $-CONH_2$ or —CO—NH—R, wherein R is an alkyl group having 1–4 C atoms, and wherein each of the nitro groups is located at a 5-position or a 6-position.

4,425,134

PROCESS FOR PRODUCING AGGLOMERATES OF WATER-SOLUBLE DYES

Beat Bruttel, Böckten; Hansjörg Schneider, Reinach; Alain Millioud, and Michael Rosch, both of Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 190,143, Sep. 24, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,543

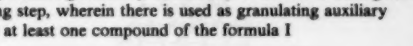
Claims priority, application Switzerland, Oct. 2, 1979, 8885/79

Int. Cl.³ C09B *67/08, 67/10, 67/00*

U.S. Cl. 8—524 21 Claims

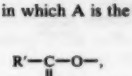
1. A process for producing an agglomerate of a water-soluble dye, comprising the steps of adding 5 to 50% by weight, relative to the weight of the dye, of a granulating auxiliary which softens in the range of 30° to 150° C., and mixing the granulating auxiliary with the dye, which is in pulverulent form, by a tumbling movement to effect particle enlargement and produce a granular agglomerate of the dyes while heating the granulating auxiliary sufficiently to soften it during the mixing step, wherein there is used as granulating auxiliary

(a) at least one compound of the formula I



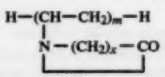
(I)

in which A is the group R—O— or



R is an aliphatic or alicyclic hydrocarbon radical containing 8 to 22 carbon atoms, R′ is an aliphatic hydrocarbon radical containing 8 to 22 carbon atoms, and n is 10 to 200, or

(b) a mixture of a compound of the formula II



(II)

in which m is 50 to 500, and x is 3 to 5, with a compound of the formula III

$$R_1—NH—CO—NH—R_1 \quad \text{(III)}$$

in which each R_1 independently of the other is hydrogen or methyl, or

(c) a mixture of a compound of the formula I with at least one compound of formulas II or III.

4,425,135

MOTOR FUEL CONTAINING REFINED CARBONACEOUS MATERIAL

Rodman Jenkins, SUPRI, Stanford, Calif. 94305

Filed Jul. 7, 1980, Ser. No. 166,349
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **30 Claims**

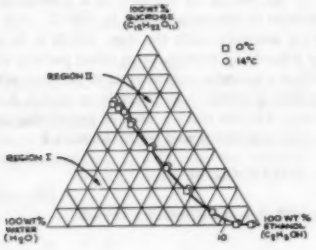
1. A fuel composition having a controlled burning rate and comprising a stable suspension of 5 to 50 weight percent refined carbonaceous material with a reduced ash content of less than 0.5% by weight ash and a predominant particle size of 2–10 microns, 5 to 20 weight percent low molecular weight alcohol, and at least 65 weight percent liquid, combustible hydrocarbon selected from the group consisting of gasoline and diesel fuel, said carbonaceous material having been obtained by solvent extraction of coal at a temperature not exceeding 200° C.

4,425,136

MINIMALLY REFINED BIOMASS FUEL

Richard K. Pearson, Pleasanton, and Tomas B. Hirschfeld, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 26, 1981, Ser. No. 247,709
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **6 Claims**



1. A combustible furnace fuel, comprising:

a mixture of alcohols, each of said alcohols having less than 4 carbon atoms, said alcohols being present in an amount from about 19 to 30 percent of the total weight of said fuel; water; and

a mixture of water soluble carbohydrates containing the sacrose group

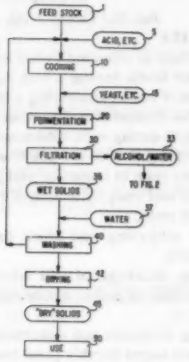
said carbohydrates being present in an amount which exceeds about 23 percent by weight relative to water.

4,425,137

ALCOHOL AND FUEL PRODUCTION

Ernest R. Roth, Villanova, Pa., assignor to Biohol Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 217,703, Dec. 18, 1980, Pat. No. 4,306,884. This application Dec. 18, 1981, Ser. No. 331,964
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 **14 Claims**



1. In separation of a mixture of water and alcohol, the step of extracting alcohol from the mixture by use of a solvent comprising a higher aliphatic alcohol major portion and an unsaturated aliphatic hydrocarbon minor portion.

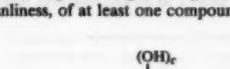
4,425,138

TWO-CYCLE FUEL COMPOSITIONS CONTAINING AMINO PHENOLS

Kirk E. Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 163,014, Jun. 25, 1980, abandoned, which is a continuation of Ser. No. 622,357, Oct. 14, 1975, abandoned. This application Oct. 13, 1981, Ser. No. 310,696
Int. Cl.³ C10L *1/10*; C10M *3/26*
U.S. Cl. 44—58 **67 Claims**

1. A lubricant-fuel mixture for two-cycle engines comprising a major amount of a normally liquid fuel, a minor amount of at least one oil of lubricating viscosity and a minor amount, sufficient to control piston ring sticking and promote general engine cleanliness, of at least one compound of the formula



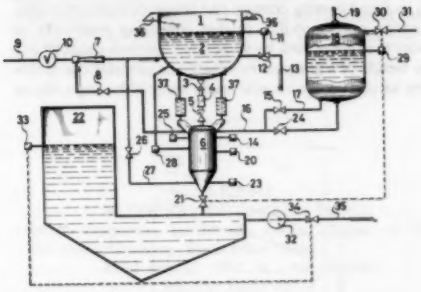
wherein R is a substantially saturated hydrocarbon-based substituent of at least about 30 aliphatic carbon atoms; a, b, and c are each independently an integer of one up to three times the number of aromatic nuclei present in Ar with the proviso that the sum of a, b, and c does not exceed the unsatisfied valences of Ar; and Ar is an aromatic moiety having 0 to 3 optional substituents selected from the group consisting of lower alkyl, lower alkoxy, nitro, halo, and combinations of two or more of said optional substituents; with the proviso that when Ar is a benzene nucleus having only one hydroxyl and one R substituent, the R substituent is para to said hydroxyl substituents.

4,425,139

APPARATUS FOR SLUICING RESIDUES FROM THE PRESSURE SYSTEM OF A PRESSURE GASIFICATION TANK

Volkmar Schmidt, Oberhausen; Bernhard Lieder, Bottrop; Heinrich Scheve, Oberhausen, and Hans Dohren, Krefeld, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 162,215, Jun. 23, 1980, abandoned, which is a division of Ser. No. 53,884, Jul. 2, 1979, abandoned.
This application Jul. 2, 1981, Ser. No. 280,029
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829629
Int. Cl.³ C10J 3/00
U.S. Cl. 48—77 15 Claims



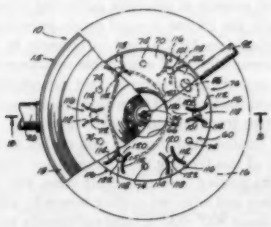
1. An apparatus for periodically sluicing residues which are produced when gasifying ash-containing fuels with oxygen comprising a gasification reactor which reactor comprises a gasification chamber disposed above means defining a water bath, said means defining a water bath in fluid communication with means for supplying process recycle water to said water bath and means for discharging process recycle water from said water bath, said means defining a water bath being connected to a lock vessel via a flexible junction and shutoff members disposed on either side of said junction upstream of said lock vessel, said lock vessel connected via a shutoff device to a collecting vessel, said lock vessel also connected via one or more lines to a surge tank.

4,425,140

GASEOUS FUEL AND AIR PROPORTIONING DEVICE

George G. Lassanske, Oconomowoc, and Arthur G. Poehlman, West Bend, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 24, 1982, Ser. No. 352,011
Int. Cl.¹ B01F 3/02; F02M 21/04
U.S. Cl. 48—180 C 12 Claims



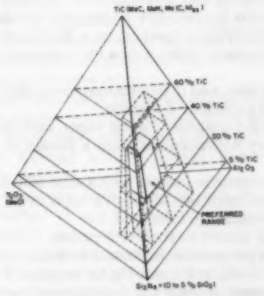
1. A device for proportioning a gaseous fuel and air for combustion in an internal combustion engine, said device including wall means defining a mixing chamber having an outlet adapted to be connected in communication with the internal combustion engine, said wall means also defining an annular venturi having an annular inlet in communication with the atmosphere, an annular outlet in communication with said mixing chamber, and an intermediate annular throat of reduced cross sectional area, said wall means further defining a substantially closed, annular plenum chamber, means for selectively admitting a gaseous fuel into said plenum chamber, a port communicating between said plenum chamber and said annular throat, and partition means disposed in said annular venturi and defining a radially extending venturi having an inlet in communication with the atmosphere, an outlet in communication with said mixing chamber and an intermediate throat at or in the vicinity of said port, whereby air flowing through said radial venturi induces flow of the gaseous fuel through said port.

4,425,141

COMPOSITE CERAMIC CUTTING TOOL

Sergej-Tomislav Buljan, Acton, and Vinod K. Sarin, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,364
Int. Cl.³ C04B 31/16
U.S. Cl. 51—309 9 Claims



1. An abrasion resistant composite cutting tool consisting essentially of a particulate material selected from the group consisting of the refractory metal carbides, nitrides, carbonitrides and mixtures thereof of titanium, tungsten, hafnium, niobium, tantalum, vanadium, and combinations thereof uniformly distributed in a matrix comprising a modified silicon aluminum oxynitride, said particulate material comprising from about 5 volume percent to about 60 volume percent of said cutting tool and having an average particle size of between about 0.5 microns and about 20 microns; said modified silicon aluminum oxynitride having a modifier selected from the group consisting of the oxides of silicon, yttrium, magnesium, hafnium, zirconium, beryllium, the lanthanides and combinations thereof,

said modified silicon aluminum oxynitride being formed from about 2 to about 25 volume percent of said modifier, from about 20 to about 90 volume percent silicon nitride, and from about 5 to about 60 volume percent aluminum oxide.

4,425,142

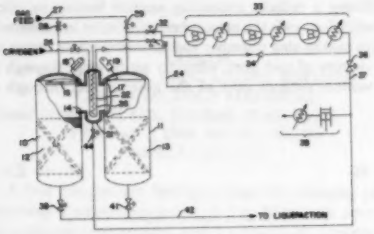
PRESSURE SWING ADSORPTION CYCLE FOR NATURAL GAS PRETREATMENT FOR LIQUEFACTION

Ray E. Mann, Wheaton, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 15, 1982, Ser. No. 441,482

Int. Cl.³ B01D 53/04

U.S. Cl. 55—25 **6 Claims**



1. A system for removal of relatively high boiling constituents from a condensible gas comprising:

an evacuable contact chamber;

a solid adsorbent within said chamber adapted to adsorb said high boiling constituents;

first conduit means for introducing a stream of said gas containing said constituents into said chamber for contact with said adsorbent;

second conduit means for permitting said stream to leave said chamber after contact with said adsorbent;

a cryoplate housing in fluid communication with said chamber;

a cryoplate within said housing;

valve means for hermetically sealing said housing;

means for supplying a liquid cryogen to said cryoplate; and

mechanical vacuum pump means for evacuating said chamber;

means for heating said cryoplate to remove said constituents which have condensed thereon.

6. A process for removal of water vapor, carbon dioxide and relatively heavy hydrocarbons from a stream of natural gas comprising:

passing said stream in contact with a solid adsorbent for said constituents until the adsorptive capacity of said adsorbent is substantially exhausted;

isolating said adsorbent from said stream;

reducing the gas pressure in contact with said adsorbent to a value below about 0.1 mm Hg by means of a mechanical vacuum pump to cause the desorption of carbon dioxide and hydrocarbons from said adsorbent;

exposing said adsorbent to a cryoplate condenser maintained at a temperature sufficiently low to condense water vapor thereon for a time sufficient to desorb substantially all adsorbed water from said adsorbent, and

recycling said adsorbent.

4,425,143

ADSORPTION BY ZEOLITIC COMPOSITION

Junichi Nishizawa; Rensaku Suzuki, and Kenji Aizawa, all of Sendai, Japan, assignors to Shin Tohoku Chemical Industries Inc., Japan

Continuation of Ser. No. 108,146, Dec. 28, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,387

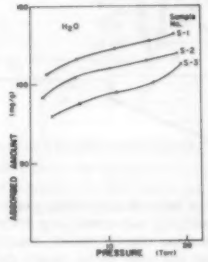
Claims priority, application Japan, Dec. 29, 1978, 53-162338; Dec. 29, 1978, 53-162339; Dec. 29, 1978, 53-162340; Jan. 10, 1979, 54-2032

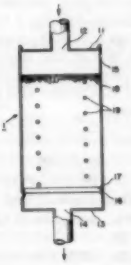
Int. Cl.³ B01D 53/04

U.S. Cl. 55—31 **14 Claims**

1. Method of treating a starting fluid rich in adsorbable substance for removing said adsorbable substance substantially completely therefrom to provide a treated fluid substantially free from said adsorbable substance, and carried out in a hermetic adsorption chamber of high thermal conductivity and heat resistance and capable of withstanding elevated temperatures of about 300°–600° C. and having an inlet for passing said starting fluid into said chamber, an outlet for recovering said treated fluid therefrom, thermally conductive surface means defining an internal space within said chamber for receiving a porous adsorbent therein, and means for heating said adsorbent and the adjacent thermally conductive surface means to said temperatures of about 300°–600° C., which comprises the steps of

passing said starting fluid through said inlet and into adsorbing contact with a porous adsorbent received in said internal space and which is of natural zeolite mineral origin, which has been ore dressed and then classified according to its iron impurity content and which constitutes a composition corresponding to that consisting essentially of more than about 90% by weight but less than about 99.8% by weight of a granular mordenitic or granular clinoptilolitic natural zeolite mineral origin material having a silicon





to aluminum atomic ratio of more than about 4, the balance being iron present as naturally occurring impurity in association with the zeolite mineral origin granular material and calculated as Fe_2O_3, and sufficiently to adsorb substantially completely said adsorbable substance on said composition and thereby remove said adsorbable substance from said starting fluid to provide said treated fluid substantially free from said adsorbable substance,

recovering said treated fluid through said outlet, and

for the purposes of reactivating said composition, thereafter interrupting the passing and recovering steps, and heating said composition and adjacent surface means by said heating means to about 300°–600° C. and sufficiently to desorb substantially completely said adsorbable substance from said composition and thereby reactivate said composition and to desorb any said adsorbable substance which has been adsorbed onto said adjacent surface means, and removing the so desorbed adsorbable substance from said

chamber, and subsequently repeating said passing and recovering steps.

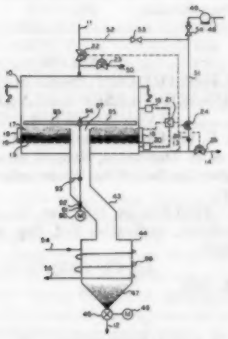
13. In an adsorption equipment comprising a hermetic adsorption chamber having a porous adsorbent therein, the improvement wherein said porous adsorbent is a composition consisting essentially of more than 90% by weight but less than 99.8% by weight of a granular mordenitic or granular clinoptilolitic material having a silicon to aluminum atomic ratio of more than about 4, the balance being iron present as naturally occurring impurity in association with the mordenitic or clinoptilolitic material of the composition and calculated as Fe_2O_3, and wherein said hermetic adsorption chamber is made of heat resistant material and has a first opening permitting the passage therethrough of a fluid rich in adsorbable substance and a second opening permitting the passage therethrough of a fluid free of said adsorbable substance, a top wall, a bottom wall, a side wall and means for heating said adsorbent composition in said adsorption chamber and within said walls to a temperature of about 300°–600° C.

4,425,144

RECOVERY OF CARBON BLACK

John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 17, 1981, Ser. No. 293,064
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—96 **10 Claims**



1. In a carbon black production operation, the process of separating carbon black from a gaseous stream containing the carbon black, which process comprises:

(a) passing the gaseous stream containing carbon black into a filtration chamber and through a filter bed comprising a primary filtration medium, which primary filtration medium comprises a loose aggregation of individual elements or particles,

(b) forming a lower layer of carbon black upon the primary filtration medium,

(c) passing the gaseous stream containing carbon black through said lower layer of carbon black formed upon the primary filtration medium to remove additional carbon black from the gaseous stream containing carbon black and depositing such additional carbon black as an upper layer on said lower layer,

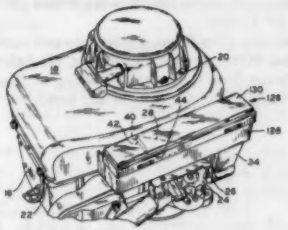
(d) removing as the product of this process said upper layer of carbon black to leave said lower layer of carbon black as a secondary filtration medium and leaving the primary filtration medium undisturbed during this removal.

4,425,145

MULTI-STAGE AIR FILTER

Paul T. Reese, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 357,302, Mar. 11, 1982. This application Apr. 7, 1983, Ser. No. 482,764
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—385 B **8 Claims**



1. In combination, an engine including a blower housing having circulating airflow therethrough, a carburetor having an inlet, and an air cleaner assembly, comprising:

a duct having an inlet and an outlet, said duct inlet being angularly disposed through said blower housing;

an air cleaner housing having side walls; a bottom wall; an interior wall upstanding from said bottom wall and dividing said air cleaner housing into two chambers, a first one of said chambers having an inlet in one of said side walls, said duct and said first chamber communicating through said duct outlet and said first chamber inlet, and a second one of said chambers having an outlet in its bottom wall;

an outlet chamber having an inlet and an outlet, said outlet chamber communicating with said second chamber through said outlet chamber inlet and said second chamber outlet, and said outlet chamber outlet communicating with said carburetor inlet;

a first means removably fitted within said first chamber for filtering airflow passing upwardly therethrough;

a second means removably fitted within said second chamber for filtering airflow passing downwardly therethrough; and

a cover having side walls and a top wall, and being removably attached to said air cleaner housing, said top wall being spaced above said first and second filtering means and said interior wall thereby defining with said first and second filtering means a passageway providing communication between said first and second chambers, whereby airflow passes through said duct outlet and is directed upwardly by said first chamber, the airflow then being redirected generally horizontally by said passageway, and thereafter being redirected downwardly by said second chamber.

4,425,146

METHOD OF MAKING GLASS WAVEGUIDE FOR OPTICAL CIRCUIT

Tatsuo Izawa, Musashino; Hidefumi Mori, Tokyo; Nobuo Shimizu, Iruma, and Yasuji Murakami, Tokorozawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,069
Claims priority, application Japan, Dec. 17, 1979, 54-162740; Dec. 17, 1979, 54-162741; Dec. 17, 1979, 54-162742; Oct. 31, 1980, 55-152173
Int. Cl.³ C03B *19/00*
U.S. Cl. 65—18.2 **8 Claims**

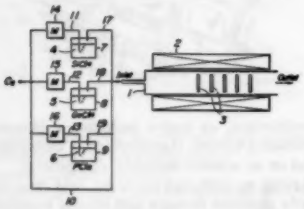
1. A method of fabricating a glass waveguide for use in an optical circuit, said waveguide being formed of a substrate

having laminated glass layers of different refractive indexes thereon, said method comprising the steps of:

placing at least one substrate in a reaction vessel having a reacting section and depositing section, the inlet of said depositing section being in the vicinity of the outlet of said reacting section;

establishing a temperature gradient in the depositing section of said reaction vessel which gradually decreases from the inlet to the outlet thereof, the temperature gradient in the vicinity of said substrate being within the range 1° C./cm to 20° C./cm;

introducing glass forming gases into said reaction vessel, said glass forming gases comprising (1) halides of elements selected from the group consisting of Si and Ti, B, P and Ge, and (2) one of oxygen and steam;



heating said glass forming gases, said glass forming gases being heated in a vapor phase to form fine glass particles by thermal oxidation or by hydrolysis, the reaction temperature at the inlet of said depositing section being selected so that said fine glass particles are formed by said glass forming gases;

depositing said fine glass particles on said substrate;

heating said substrate and deposited fine glass particles thereby vitrifying said particles into a transparent glass layer having a relatively high refractive index;

removing portions of said transparent glass layer in accordance with a predetermined pattern to form a core for said waveguide; and

covering said core with a material having a refractive index which is lower than the refractive index of said core.

4,425,147

PREHEATING GLASS BATCH

Charles M. Hohman, Granville; Mark A. Propster, Gahanna, and Stephen Seng, Bladensburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 330,064, Dec. 14, 1981, Pat. No. 4,386,951, which is a continuation of Ser. No. 181,589, Aug. 27, 1980, Pat. No. 4,319,903. This application May 6, 1983, Ser. No. 492,311

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ C03B *1/00*; F28D *19/02*

U.S. Cl. 65—27 **6 Claims**

1. A process for producing glass by charging to a melting furnace and melting therein a particulate glass batch, including the steps of:

heating durable heat transfer media, larger in particle size than the glass batch,

introducing the hot media into one end of an inclined container rotatable about an axis having the same inclination as the container;

introducing the particulate glass batch into the other end of the container;

rotating the container, during rotation the batch and media tumbling and moving over each other in heat transfer relationship; and

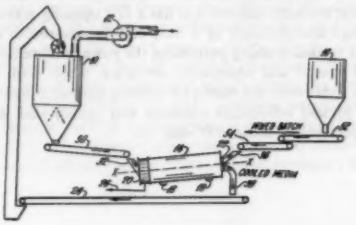
moving the glass batch in one direction through the rotating container for discharge and moving the hot media in the opposite direction for discharge at the other end.

4. An apparatus for preheating particulate glass batch comprising;

means for heating durable heat transfer media;

a container rotatable about an axis, the axis being inclined to the horizontal;

means for introducing the hot media, larger in particle size than the glass batch, into one end of the container for movement towards the other end for discharge;



means for introducing particulate glass batch into the other end of the container for movement towards the one end for discharge;

means for rotating the container along the inclined axis; and

means associated with the interior of the container for tumbling and mixing the hot media and the particulate glass batch in direct contact with each other during rotation of the container to heat the glass batch prior to charging to a melting furnace.

4,425,148

DEVICE FOR THE CONTINUOUS PRODUCTION OF GLASS BODIES ESPECIALLY CONTAINING RADIOACTIVE WASTE

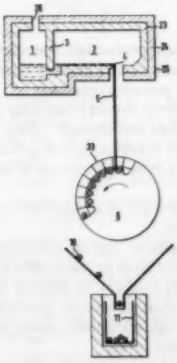
Jacobus N. C. van Geel, Retie; Frans M. Dobbels, Dessel, and Walther A. H. Theunissen, Hamont, all of Belgium, assignors to Deutsche Gesellschaft fur Wiederaufarbeitung, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 352,036

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108694

Int. Cl.³ C03B *19/10*

U.S. Cl. 65—142 **15 Claims**



1. Device for continuous production of molded glass bodies from a glass melt containing radioactive waste comprising

means for dispensing said melt in a continuous stream, and a wheel mounted for rotation beneath said dispensing means, said wheel having formed in a surface thereof a series of mold cavities for receiving said melt as the wheel rotates, adjacent cavities being circumferentially separated by thin flat walls terminating in a knife edge, said thin flat walls of each cavity being joined at their ends by frusto-conical segmental walls.

4,425,149

METHOD OF MAKING A DRY COMPOUND CONTAINING CHELATED MICRONUTRIENTS AND THE CHELATING AGENT USED TO FORM THE COMPOUND

William S. Kimbro, P.O. Box 415, Bass Lake, Calif. 93604

Filed Jul. 23, 1982, Ser. No. 401,262

Int. Cl.³ C05D 9/02

U.S. Cl. 71—24 **4 Claims**

1. A method of making a dry compound containing chelated fertilizer micronutrients, said method comprising the steps of mixing about 32% by weight leonardite ore, 3% by weight citric acid, 1% by weight concentrated nitric acid, and 64% by weight methanol; stirring the mixture about one hour; mixing about 20% by weight of the resulting mixture with about 80% by weight sodium citrate, to make a chelating agent; stirring the chelating agent until dry; grinding the chelating agent into a powder; mixing the powdered chelating agent with an amount of dry, powdered, sulfates of the desired micronutrients to produce the desired percentage of said chelated fertilizer micronutrients; allowing the mixture to stand until all reactions between the ingrediants are substantially complete; and regrinding the resulting compound into a powder.

4,425,150

COMPOSITIONS CONTAINING AND METHODS OF USE OF AN INFECTIVITY-CURED HR PLASMID-BEARING MICROORGANISM

Gary A. Strobel; Andrea H. Gaviak, and Jesse M. Jaynes, all of Bozeman, Mont., assignors to Research and Development Institute, Inc. at Montana State University, Bozeman, Mont.

Filed May 4, 1981, Ser. No. 260,167

Int. Cl.³ A01N 63/00

U.S. Cl. 71—77 **16 Claims**

1. An agriculturally useful composition, comprising

a seed selected from the group consisting of pea, soybean and Kentucky bluegrass; and

a growth-stimulating coating on said seed of an infectivity-cured Hr plasmid-bearing *A. rhizogenes* microorganism; said microorganism being free from pathogenicity to carrots as shown by an inability to induce root proliferation in carrots, and said microorganism having the growth stimulating characteristics of *A. rhizogenes* A_4 ATCC 31799; said coating having a concentration of said microorganism effective to induce or enhance said seed germination.

4,425,151

SULFUR-CONTAINING OXIME COMPOUNDS, PROCESSES FOR PRODUCING THEM, AND THEIR USE FOR PROTECTING CULTIVATED PLANTS

Elmar Sturm, Aesch; Heinrich Schempp, Arlesheim, and Henry Martin, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

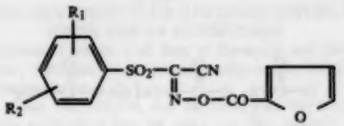
Division of Ser. No. 68,123, Aug. 20, 1979, Pat. No. 4,278,613. This application May 4, 1981, Ser. No. 260,537

Claims priority, application Switzerland, Aug. 28, 1978, 9081/78

Int. Cl.³ A01N 25/32; C07D 307/68

U.S. Cl. 71—88 **4 Claims**

1. A composition for protecting crops against the action of herbicides which comprises (1) a crop protecting effective amount of a compound of the formula



wherein each of R_1 and R_2 is hydrogen, halogen or C_1–C_4 alkyl, and (2) a carrier.

4,425,152

2H-1,2,4,6-THIATRIAZIN-3-ONE-1,1-DIOXIDES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Gerhard Hamprecht, Weinheim; Rolf-Dieter Acker, Leimen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

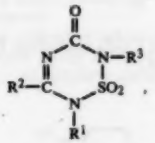
Filed Aug. 23, 1982, Ser. No. 410,840

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134141

Int. Cl.³ C07D 285/00; A01N 43/72

U.S. Cl. 71—91 **9 Claims**

1. A 2H-1,2,4,6-thiatriazin-3-one-1,1-dioxide of the formula



(I)

where R^1 is hydrogen, a metal atom or unsubstituted or substituted ammonium, R^2 is a saturated or unsaturated straight-chain aliphatic radical of not more than 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a saturated or unsaturated branched aliphatic radical of not more than 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted aliphatic radical of 2 to 10 carbon atoms, unsubstituted or halogen-substituted benzyl, or phenyl which is unsubstituted or substituted by halogen or by alkyl of 1 to 4 carbon atoms, and R^3 is hydrogen, a saturated or unsaturated straight-chain aliphatic radial of not more than 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a saturated or unsaturated branched aliphatic radical of 3 to 10 carbon atoms or a halogen- or alkoxy-substituted alkyl radical of 2 to 10 carbon atoms, with the proviso that R^2 is not methyl when R^1 is hydrogen and R^3 is methyl or isopropyl, and R^2 is not phenyl when R^1 is hydrogen and R^3 is isopropyl.

4,425,153

HERBICIDAL SULFONAMIDES

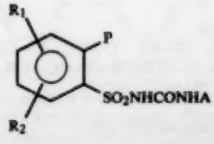
John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation of Ser. No. 168,353, Jul. 11, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,301

Int. Cl.³ A01N 43/54, 43/66

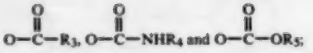
U.S. Cl. 71—92 **22 Claims**

1. A compound selected from:



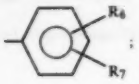
I

wherein
P is

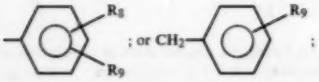


R_1 is H, F, Cl, Br, C_1–C_3 alkyl, NO_2, C_1–C_3 alkoxy, CF_3 or

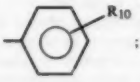
R_2 is H, CH_3 or Cl;
R_3 is H; C_1–C_5 alkyl; C_2–C_3 alkenyl; C_2–C_3 alkynyl; C_1–C_4 alkyl substituted with 1–3 substituents selected from 0–3 F, 0–3 Cl, 0–3 Br, and OCH_3; C_2–C_3 alkenyl substitutd with Cl; C_3–C_6 cycloalkyl; or



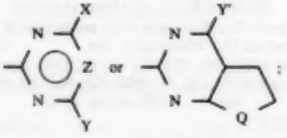
R_4 is C_1–C_6 alkyl; C_3–C_4 alkenyl; C_3–C_6 cycloalkyl; C_5–C_6 cycloalkyl substituted with CH_3;



R_5 is C_1–C_6 alkyl or

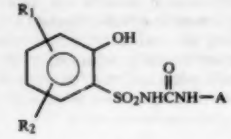


R_6 and R_7 are independently H, NO_2, CH_3, Cl or OCH_3;
R_8 is H, F, Cl, Br, C_1–C_3 alkyl, NO_2, CN, SO_2CH_3, OCH_3, SCH_3 or CF_3;
R_9 is H or C_1–C_3 alkyl;
R_{10} is H, CH_3 or Cl;
A is



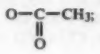
X is H, Cl, Br, CH_3, CH_3CH_2, C_1–C_3 alkoxy, CF_3, CH_3S or CH_3OCH_2;
Y is CH_3 or CH_3O;
Z is N, CH, C—Cl, C—Br, C—CN, C—CH_3, —C—CH_2CH_3, C—CH_2CH_2Cl or C—CH_2CH=CH_2;
Y' is H, CH_3, OCH_3 or Cl; and
Q is O or CH_2;
and their agriculturally suitable salts.

8. A compound selected from:

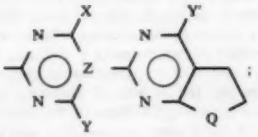


II

wherein
R_1 is H, F, Cl, Br, C_1–C_3 alkyl, NO_2, C_1–C_3 alkoxy, CF_3 or



R_2 is H, CH_3 or Cl;
A is



X is H, Cl, Br, CH_3, CH_3CH_2, C_1–C_3 alkoxy, CF_3, CH_3S or CH_3OCH_2;
Y is CH_3 or CH_3O;
Z is N, CH, C—Cl, C—Br, C—CN, C—CH_3, —C—CH_2CH_3, C—CH_2CH_2Cl or C—CH_2CH=CH_2;
Y' is H, CH_3, OCH_3 or Cl; and
Q is O or CH_2;

11. A composition for the control of undesirable vegetation consisting essentially of a compound of claim 1 and at least one of (a) a surface-active agent and (b) a solid or liquid diluent.

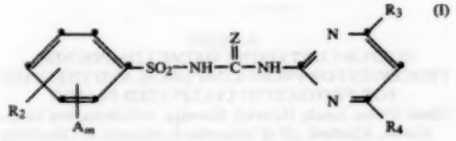
4,425,154

N-PHENYLSULFONYL-N'-PYRIMIDINYLUREAS

Willy Meyer, Rieben, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 417,716, Sep. 13, 1982, abandoned, which is a division of Ser. No. 282,847, Jul. 13, 1981. This application Jan. 17, 1983, Ser. No. 458,696
Claims priority, application Switzerland, Jul. 17, 1980, 5481/80; Nov. 5, 1980, 8216/80; Jun. 17, 1981, 3991/81
Int. Cl.³ C07D *239/42*; A01N *43/54*
U.S. Cl. 71—92 **24 Claims**

1. A N-phenylsulfonyl-N'-pyrimidinyl-urea of the formula I



(I)

wherein
A is a C_2–C_6 alkenyloxy, C_2–C_6 haloalkenyloxy, C_2–C_6 haloalkenylthio, C_2–C_6 haloalkenylsulfinyl or C_2–C_6 haloalkenylsulfonyl radical
Z is oxygen or sulfur,
m is 1 or 2,
R_2 is hydrogen, halogen, C_1–C_5alkyl, C_2–C_5alkenyl, C_1–C_4-haloalkyl, or a radical —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,

R_3 and R_4, each independently of the other, are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4haloalkyl, halogen or alkoxyalkyl of at most 4 carbon atoms,
R_5 and R_6, each independently of the other, are C_1–C_5alkyl, C_2–C_5alkenyl or C_2–C_6alkynyl,
R_7 and R_8, each independently of the other, are hydrogen, C_1–C_5alkyl, C_2–C_5alkenyl or C_2–C_6alkynyl, and
Y is oxygen, sulfur, a sulfinyl or sulfonyl bridge,
or a salt thereof.

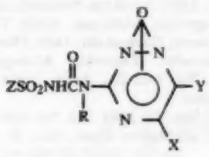
4,425,155

HERBICIDAL SULFONAMIDE N-OXIDES

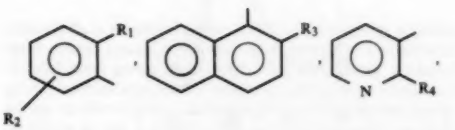
Donald J. Dumas, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 26, 1982, Ser. No. 401,513
Int. Cl.³ C07D *253/06*; A01N *43/64*
U.S. Cl. 71—93 **30 Claims**

1. A compound of the formula:



wherein
Z is



R is H or CH_3;
R_1 is CO_2R_6, $S(O)_nR_7$, OSO_2R_8, OR_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$, CH_2OR_{12}, F, Cl, Br, NO_2, CF_3 or C_1–C_4 alkyl;
R_2 is F, Cl, Br, NO_2, CF_3, CH_3, OCH_3 or H;
R_3 is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, Cl, OSO_2CH_3 or SO_2R_8;
R_4 is H, CH_3, OCH_3, Cl, SO_2CH_3 or $SO_2N(CH_3)_2$;
R_5 is H, CH_3, Cl, Br, NO_2, SO_2CH_3, $SO_2N(CH_3)_2$ or CO_2R_8;
R_6 is C_1–C_4 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_7 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CF_3, CF_2H or CF_2CF_2H;
R_8 is C_1–C_3 alkyl;
R_9 is C_1–C_4 alkyl, C_3–C_4 alkenyl, CF_3, CF_2H or CF_2CF_2H;
R_{10} and R_{11} are independently C_1–C_3 alkyl;
R_{12} is C_1–C_2 alkyl;
n is 0, 1 or 2;
X is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, Cl, Br, C_1–C_3 thioalkyl or $N(CH_3)_2$; and
Y is H, Cl, Br, CH_3 or C_2H_5; and their agriculturally suitable salts; provided that the total number of carbon atoms in R_{10} and R_{11} are less than or equal to 4.

21. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

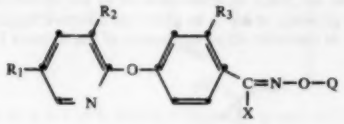
4,425,156

PYRIDYL-2-OXYPHENYLOXIME DERIVATIVES, AND THEIR USE AS HERBICIDES

Georg Pissiotas, Lörrach, Fed. Rep. of Germany, and Hermann Rempfler, Ettingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 172,575, Jul. 28, 1980, Pat. No. 4,322,241. This application Jan. 19, 1982, Ser. No. 340,677
Claims priority, application Switzerland, Aug. 7, 1979, 7230/79
Int. Cl.³ C07D *213/64*; A01N *43/40*
U.S. Cl. 71—94 **7 Claims**

1. A compound of the formula



wherein
R_1 is halogen or trifluoromethyl,
each of R_2 and R_3 is hydrogen or halogen,
X is methyl or cyano, and
Q is acetyl, benzoyl or substituted by 1–2 halogen atoms benzoyl.

7. A method of selectively controlling weeds in crops of cultivated plants, which comprises applying to said crops a herbicidally effective amount of a compound of claims 1, 2 or 5.

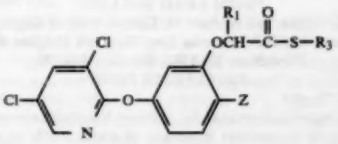
4,425,157

PYRIDYLOXY-PHENOXY-ALKANETHIOCARBOXYLIC ACID ESTER DERIVATIVES AND THEIR HERBICIDAL USE

Hermann Rempfler, Ettingen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 140,402, Apr. 14, 1980, Pat. No. 4,329,167, which is a continuation-in-part of Ser. No. 80,965, Oct. 1, 1979, abandoned, which is a continuation of Ser. No. 919,119, Jun. 26, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,039
Claims priority, application Switzerland, Jun. 29, 1977, 8023/77
Int. Cl.³ C07D *213/64*; A01N *43/40*
U.S. Cl. 71—94 **21 Claims**

1. A compound of the formula:



wherein
R_1 is methyl, ethyl or methoxymethyl,
R_3 is alkyl of 1 to 5 carbon atoms, alkenyl of 3 to 4 carbon atoms, propynyl, phenyl, or $—CH_2COOCH_3$, and
Z is chloro, bromo or nitro.

4,425,158
BICYCLO(2.2.1)HEPTANE OXIMES USED FOR PLANT GROWTH REGULATING

Zoltan Budai; Attila Kis-Tamas; Tibor Mezei; Aranka Lay nee Konya; Zoltan Vigh, and Agnes Sokorai nee Janki, all of Budapest, Hungary, assignors to EGYT Gyogyszervegyeszeti Gyar, Budapest, Hungary

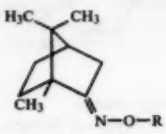
Filed Nov. 18, 1981, Ser. No. 322,675

Claims priority, application Hungary, Nov. 21, 1980, 2774/80

Int. Cl.³ A01N *33/04*

U.S. Cl. 71—121 **7 Claims**

1. A process for regulating the growth of corn, cereals, sunflower, alfalfa, sugar beets, rape, soybean, potato, rice, green pepper, tomato and/or vegetables which comprises applying to the plants or their seeds or to soil in which the plants are growing or are to be grown an effective amount of a racemic or optically active compound of the formula I



I

wherein

R represents a C_1–C_{12} alkyl group optionally substituted by a lower alkoxy group, a C_{2-4} alkenyl group or a phenyl-(lower alkyl) group optionally substituted on the phenyl ring by one or more lower alkoxy group(s) of halogen atom(s),

along with a conventional organic or inorganic, solid and/or liquid carrier and/or filler and/or diluent and/or surfactant.

4,425,159
METHOD OF USING PARTIAL COMBUSTION BURNERS

Ivor G. Nixon, ler Stock Ost, "Matterhorngruss", Zermatt 3920, Valais, Switzerland

Filed Jul. 8, 1974, Ser. No. 486,346

Claims priority, application United Kingdom, Sep. 22, 1970, 45722/70

Int. Cl.³ C21B *5/06*

U.S. Cl. 75—29 **15 Claims**

1. In a method for operating a burner in which a hydrocarbon fuel is reacted with molecular oxygen to produce a product gas which is a chemically reducing gaseous mixture, the improvement which comprises:

a. surrounding a mixture of a first hydrocarbon fuel and molecular oxygen in said burner with a co-axial mantle of cooling gases; and

b. producing said cooling gases by mixing a second hydrocarbon with a gas containing carbon dioxide and/or water vapor.

4,425,160
REFINING PROCESS FOR REMOVING ANTIMONY FROM LEAD BULLION

Jitesh R. Mehta, and Andrew H. Larson, both of Eagan, Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Nov. 23, 1982, Ser. No. 444,258

Int. Cl.³ C22B *13/06*

U.S. Cl. 75—63 **23 Claims**

1. An improved process for refining lead bullion containing antimony in an amount in excess of about 0.5% by weight, comprising the following steps:

(a) heating said lead bullion to a temperature of approximately 25° F. (14° C.) above its melting temperature to form a molten bullion and discontinuing said heat source;

(b) agitating said molten bullion;

(c) adding caustic soda to said molten bullion;

(d) adding metallic sodium to said molten bullion;

(e) mixing said caustic soda and said metallic sodium into said molten bullion;

(f) forming a skimmable refining dross comprising sodium-antimony intermetallic;

(g) separating said dross from said refined molten bullion;

(h) cleansing said refined bullion to remove substantially all sodium in solution in said bullion as a skimmable cleansing dross; and

(i) controlling throughout the steps (b) through (h) of said process an operating temperature of said molten bullion within the temperature range of 600° F. (316° C.) to 800° F. (427° C.) utilizing the heat from the exothermic reactions of said process, and cooling as necessary, to maintain said bullion temperature within said range.

4,425,161
THERMOCHROMIC MATERIALS

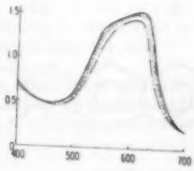
Yutaka Shibahashi, No. 22-1, Ubakoyama, Narumi-cho, Midori-ku, Nagoya-shi, Aichi; Norikazu Nakasuji, No. 1-496, Haruki Shiratsuchi, Togo-cho, Aichi-gun, Aichi; Takashi Kataoka, No. 6-4-18,, Ishiodai, Kasugai-shi, Aichi; Hiroshi Inagaki, No. 4-6-27, Kitayamadai, Togo-cho, Aichi-gun, Aichi, and Tsutomu Kito, No. 1-11-29,, Josai, Nishi-ku, Nagoya-shi, Aichi, all of Japan

Filed Nov. 24, 1981, Ser. No. 324,701

Claims priority, application Japan, Nov. 27, 1980, 55-167134

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—21 **6 Claims**



1. In a reversible thermochromic material comprising (a) one or more electron-donating, chromatic organic compounds selected from the group consisting of diaryl phthalides, aryl phthalides, indolylphthalides, polyarylcarbinols, leucoauramines, acrylauramines, arylauramines, rhodamine B lactams, indolines, spiropyrans, fluorans, thiofluorans, phenothiazines, triphenylmethanes, diarylarylfurans, spiroxanthenearylfurans, and chromenoindoles, (b) one or more compounds, compounds, which are capable of reversibly accepting electrons of said organic compound, selected from the group consisting of phenolic hydroxy group-containing compounds and derivatives thereof and carboxyl group-containing compounds and derivatives thereof, and (c) one or more compounds, which are controlling the temperature and sensitivity of coloration/-decoloration of said thermochromic material, selected from the group consisting of alcohols, esters, ketones, esters, acid amides and carboxylic acids, the ratio of each component to others (a):(b):(c) being 1:0.1 to 10:1 to 100 by weight,

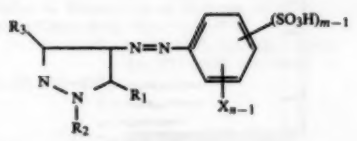
the improvement which comprises said thermochromic material further containing (d) one or more radical cationic compound selected from the group consisting of N-radical cationic, P-radical cationic, O-radical cationic and S-radical cationic compounds having aromatic ring(s), in an amount of from 0.01 to 5 parts by weight per 1 part by weight of said electron-donating chromatic organic compound, said radical cationic compound interacting with said electron-donating, chromatic organic compound to stabilize said compound, resulting in a thermochromic mateiral with an improved resistance to light.

4,425,162
METHOD FOR PROVIDING A COLOR IMAGE BY INK-JET PRINTING

Masatoshi Sugiyama; Keiichi Adachi; Eiichi Kato; Akira Ogawa, all of Minami-ashigara, and Shinichi Imai, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

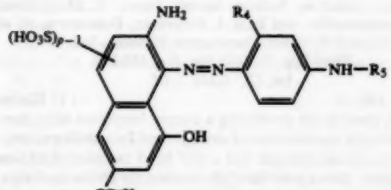
Filed Jun. 15, 1981, Ser. No. 273,991
Claims priority, application Japan, Jun. 13, 1980, 55-79923
Int. Cl.³ C09D 11/02
U.S. Cl. 106—22 **9 Claims**

1. A method for providing a color image by ink-jet printing using an aqueous ink composition containing a yellow dye, an aqueous ink composition containing a magenta dye and an aqueous ink composition containing a cyan dye, said yellow dye being selected from among the compounds of the formula (I), said magenta dye being selected from among the compounds of the formula (II), and said cyan dye being selected from among the compounds of the formula (III):



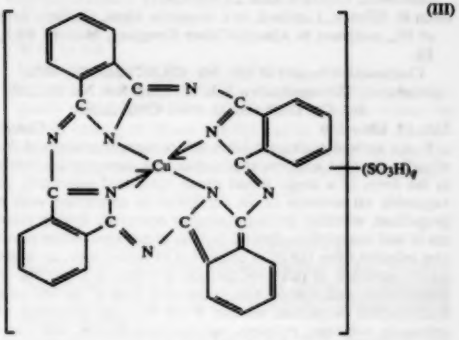
(I)

wherein R_1 is an amino group; R_2 is a phenyl group, a substituted phenyl group, a (C_1–C_4) alkyl group or a substituted (C_1–C_4) alkyl group; R_3 is a (C_1–C_4) alkyl group, a phenyl group, a substituted phenyl group, a cyano group, a hydroxyl group, an alkoxy group, an amino group, an acylamino group, an anilino group, a ureido group, an alkoxycarbonyl group or a carbamoyl group; X is a chlorine atom; n is 1, 2 or 3; and m is 1, 2 or 3, the number of sulfo groups in the formula (I) is 1 to 3, provided that sulfo groups in the formula (I) may be an alkali metal salt or an organic amine salt;



(II)

wherein R_4 is a cyano group, an alkylsulfonyl group, an arylsulfonyl group, a trichloromethyl group or a trifluoromethyl group; R_5 is a hydrogen atom, an alkyl group, an acyl group, an alkylcarbamoyl group or an arylcarbamoyl group; and p is 1 or 2, provided that sulfo groups in the formula (II) may be an alkali metal salt or an organic amine salt; and



(III)

wherein q is 1 to 4, provided that sulfo groups in the formula (III) may be an alkali metal salt or an organic amine salt.

4,425,163
METHOD OF PRODUCING CEMENT CLINKER

Hans-Werner Schmidt, Frankfurt am Main; Hans Beiswenger, Bad Soden; Lothar Reh, Frankfurt am Main, all of Fed. Rep. of Germany; Albert Folliot, 8 rue Darcel, F 92100 Boulogne, France, and Maurice Paliard, Chalon-sur-Saone, France, assignors to Creusot-Loire Enterprises, Suresnes; Lafarge Coppee, Paris; Albert Folliot, Boulogne, all of, France and Metallgesellschaft AG, Frankfurt, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,876
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107710
Int. Cl.³ C04B 7/44
U.S. Cl. 106—100 **8 Claims**

1. In a method of producing cement clinker comprising preheating the raw cement powder in a suspension-type heat exchanger, de-acidifying the so-preheated raw cement powder in a fluidized bed, clinkering the so de-acidified material in a rotary kiln and subsequently cooling the clinker, the improvement comprising:

(a) de-acidifying said raw cement powder at a temperature above 850° C. to a degree of at least 95% in a de-acidification circulation system comprising a de-acidification fluidized bed reactor, a cyclone separator and a recycling duct;

(b) feeding at least 65% relative to the total heat requirement, of the fuel required for the calcining and clinkering processes to the de-acidifying fluidized bed reactor and at least 10%, relative to the total heat requirement, to the rotary kiln;

(c) near stoichiometrically burning the fuel supplied to the de-acidifying fluidized bed reactor in at least two combustion stages with at least two partial streams of oxygen-containing gas, one of said streams being supplied as fluidizing gas and the other being supplied on a higher level as secondary gas, the ratio of the rates and volumes of fluidizing gas to secondary gas being maintained in the range from 1:1 to 1:10 so that a mean suspension density of 100 to 300 kg/m³ is maintained in the zone between the inlet for fluidizing gas and the inlet for secondary gas; and

(d) maintaining a mean suspension density of 5 to 30 kg/m³ above the inlet for secondary gas.

4,425,164

AEROSOL COOKWARE LUBRICANT COMPOSITION

John B. Bliznak, Lombard, and Armando Algas, Chicago, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 159,832, Jun. 16, 1980, abandoned. This application Feb. 25, 1982, Ser. No. 352,200

Int. Cl.[3] C08L *89/00, 3/00;* C09K *3/30*

U.S. Cl. 106—150 7 Claims

1. An aerosol cookware lubricant composition adapted for visually-directed uniform application, said composition being in the form of a single liquid phase composed essentially of vegetable oil solution of an emulsifier in admixture with a propellant, wherein the improvement comprises having present in said composition from 2 to 15% of insoluble white particles selected from the class consisting of white flour, or white starch particles, or mixtures thereof, and from 0.5 to 2.0% of fumed silica, said composition containing from 10 to 40% of a hydrocarbon propellant selected from the class consisting of isobutane, n-butane, propane, and mixtures thereof, said composition containing from 2 to 20% by weight of water-dispersible lecithin, said percentages being by weight and being based on the total weight of said composition, the vegetable oil in said composition being liquid at normal use temperatures.

4,425,165

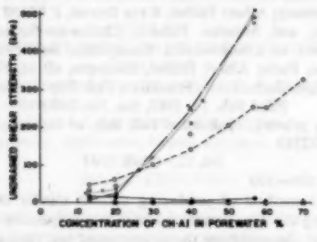
STABILIZING CLAY SOIL WITH HYDROXY-ALUMINUM AND CELLULOSIC POLYMERS

Odd R. Bryhn, and Tor Loken, both of Oslo, Norway, assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 1, 1982, Ser. No. 438,234

Int. Cl.[3] C08K *3/24;* C08L *1/26;* C09K *3/00;* C04B *1/47*

U.S. Cl. 106—193 R 7 Claims



1. In a method of stabilizing quick clay soil having a high water content by mixing an effective amount of dry hydroxy-aluminum with the quick clay soil, the improvement comprising adding to the hydroxy-aluminum an effective amount of cellulosic polymer to deactivate water and thereby assist in preventing such water from fluidizing the quick clay soil.

4,425,166

LOW TEMPERATURE CURE INTERLAMINAR COATING

Norman M. Pavlik, Plum Boro, and John Sefko, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 190,693, Sep. 25, 1980, Pat. No. 4,362,782. This application Jun. 10, 1982, Ser. No. 387,298

Int. Cl.[3] C04B *39/00;* C09D *1/00*

U.S. Cl. 106—286.2 4 Claims

1. A zinc-nickel-phosphate coating composition for improving the interlaminar insulation of components used in a magnetic circuit and which can be cured at relatively low temperatures consisting essentially in weight percent of from about 2% to about 6% zinc, from about 0.1% to about 1% nickel, from about 4% to about 8% phosphorus, from about 0.1% to about 1% of a wetting agent, from about 0.5% to about 17% of concentrated nitric acid, from about 0% to about 15% of an interlamination resistance improving agent, said resistance improving agent principally comprising magnesium silicate and from about 0% to about 15% by weight of an agent which improves the smoothness of the applied coating selected from the group consisting of boric acid and aluminum nitrate, and the balance essentially water, said coating when dried weighing between about 20% and 30% by weight of the coating as a liquid.

4,425,167

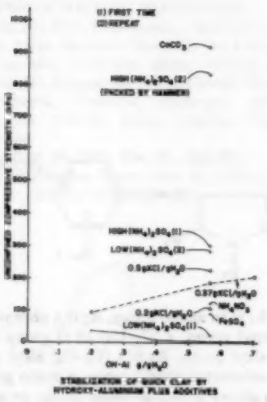
STABILIZING CLAY SOIL WITH A MIXTURE OF HYDROXY-ALUMINUM AND BASE

Odd R. Bryhn, Oslo, Norway, assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 1, 1982, Ser. No. 438,235

Int. Cl.[3] C04B *33/13;* C09K *3/00, 17/00*

U.S. Cl. 106—287.17 4 Claims


(1) FIRST TIME
(2) REPEAT
UNCONFINED COMPRESSIVE STRENGTH (kPa)
OH-Al g/g H2O
STABILIZATION OF QUICK CLAY BY HYDROXY-ALUMINUM PLUS ADDITIVES

1. In a method of stabilizing quick clay soil by mixing an effective amount of dry hydroxy-aluminum with the clay soil, the improvement comprising adding to the dry hydroxy-aluminum an effective amount of dry base prior to contacting the clay soil to form a mixture of dry hydroxy-aluminum and dry base and contacting the clay soil with said mixture to gel water contained in said quick clay wherein said base is selected from the group consisting of carbonates and bicarbonates.

4,425,168

COPPER BERYLLIUM ALLOY AND THE MANUFACTURE THEREOF

Sherwood Goldstein, Sinking Spring; Henry T. McClelland, Shoesmakersville, and Paul J. Scherbner, Boyertown, all of Pa., assignors to Cabot Corporation, Kokomo, Ind.

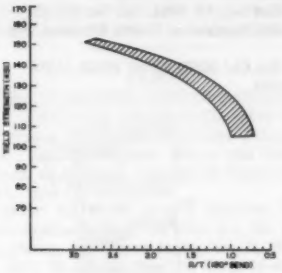
Filed Sep. 7, 1982, Ser. No. 415,205

Int. Cl.[3] C22F *1/08*

U.S. Cl. 148—2 17 Claims

1. In a process for producing a copper beryllium alloy having a desirable combination of strength and formability characterized by a yield strength and a 180° bend radius to thickness ratio within, directly to the right or directly above the cross-hatched area of FIG. 1, which process includes the steps of: preparing a copper beryllium melt; casting the melt; hot working the cast copper beryllium; annealing the copper beryllium; cold working the annealed copper beryllium; and hardening the copper beryllium; the improvement comprising the steps of: solution annealing cold worked copper beryllium at a temperature of from 1275° (691°) to 1375° F. (746° C.); hardening said annealed copper beryllium at a temperature of from 400°

(204°) to 580° F. (304° C.); cold working said hardened copper beryllium, said cold working resulting in a reduction in thick-



ness of at least 3%; and stress relief annealing said cold worked copper beryllium at a temperature of from 400° (204°) to 700° F. (371° C.).

4,425,169

AUSTENITIC-MANGANESE STEEL

Dilip K. Subramanyam, Pompton Lakes; Henry J. Chapin, and Bruce A. Heyer, both of Mahwah, all of N.J., assignors to Abex Corporation, New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 372,198
Int. Cl.³ C22C *38/04*
U.S. Cl. 148—137 **1 Claim**

1. A fine grained austenitic manganese steel casting having an ASTM grain size up to about 2 produced from one of the following alloys:

(a) an alloy consisting essentially of in weight percents
C 1.76
Mn 10.46
Al 2.50
Cr up to 2
Si up to 0.8
balance essentially iron and impurities;

(b) an alloy consisting essentially of weight percents
C 1.46
Mn 11.13
Al 1.19
Cr up to 2
Si up to 0.8
balance essentially iron and impurities;

(c) an alloy consisting essentially of in weight percents
C 1.50
Mn 10.67
Al 2.50
Cr up to 2
Si up to 0.8
balance essentially iron and impurities; or

(d) an alloy consisting essentially of in weight percents
C 1.94
Mn 12.68
Al 2.26
Cr up to 2
Si up to 0.8
balance essentially iron and impurities

which when slowly cooled after casting exhibits a predominantly pearlitic microstructure without having to anneal the as-cast casting to obtain pearlite and in which the pearlite recrystallizes upon solutionizing (austenitizing) to form the fine grained austenite without any intervening annealing.

4,425,170

DESENSITIZING EXPLOSIVES

Walter T. Jones, Orpington, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 903,794, May 8, 1979, abandoned. This application Jul. 29, 1980, Ser. No. 173,395
Claims priority, application United Kingdom, May 11, 1977, 19869/77
Int. Cl.³ C06B *45/22*
U.S. Cl. 149—109.6 **15 Claims**

1. A process for the preparation of a desensitized explosive by treatment of a particulate explosive with a wax comprising the steps of:

(a) forming a paste of a particulate explosive in a liquid medium that is a non-solvent for the explosive and for said wax,

(b) adding to said paste, with stirring, said wax in a particulate form with a mean particle size of less than 20 microns, and a wetting agent selected from the group consisting of fatty acid esters and sodium alkyl sulphates of higher fatty alcohols to form a treated explosive, and

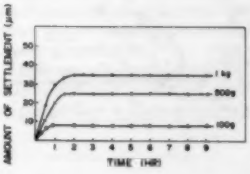
(c) filtering off said treated explosive, wherein each of steps (a), (b) and (c) is performed in the cold and further wherein the amount of wetting agent added is about 0.05% to about 0.2% (by wt) of the dry explosive.

4,425,171

PRECISION POSITIONING METHOD

Shigenori Oosaka, and Tsuneo Komura, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Asaka, Japan

Filed Oct. 16, 1981, Ser. No. 312,083
Claims priority, application Japan, Oct. 31, 1980, 55-153432
Int. Cl.³ B32B *31/12*
U.S. Cl. 156—64 **9 Claims**



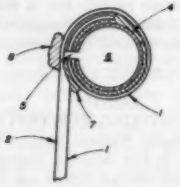
1. A precision positioning method comprising applying a curable, non-fluid, plastically deformable bonding agent in the form of a non-film adhesive between the mutually contacting portions of a component and the object on which the component is to be positioned, said bonding agent having a viscosity between 10^6 and 10^{11} poise and having as its main components a fine powder filler and a curable bonding component, positioning the component to deform the bonding agent before the bonding agent hardens, and releasing the positioned component to be fixed in the positioned orientation by the hardening of the bonding agent.

4,425,172

MANIFOLDS FOR STRUTTED FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Nov. 9, 1981, Ser. No. 319,761
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—187 10 Claims



1. A process for joining a conduit having an internal passageway to a film having internal struts and providing fluid tight communication between said struts and said passageway comprising:

applying an adhesive to said conduit;

applying said strutted film to said adhesive;

winding said strutted film about said conduit whereby said adhesive and said strutted film encircles said conduit;

providing a coupling orifice in communication with said passageway and a strut; and

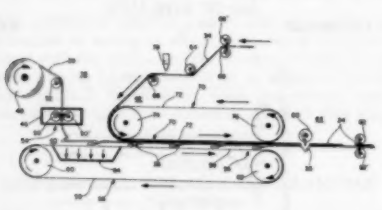
applying a patch over an exterior opening of said coupling orifice.

4,425,173

APPARATUS AND METHOD FOR PRODUCING AN ELASTICIZED GARMENT

Richard H. Frick, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 19, 1982, Ser. No. 399,559
Int. Cl.³ A61F *13/16*; B32B *31/08*, *31/12*
U.S. Cl. 156—204 11 Claims



1. In an apparatus for applying continuously moving elastic ribbon to a continuously moving web, the combination comprising:

means for supplying the web to a moving support surface;

means for transverse folding the web against itself at spaced intervals;

means for moving the elastic ribbon into engagement with the folded web across the folds;

means for adhering the elastic ribbon to the unfolded portions of the web;

means for at least partially opening the folds in the web; and

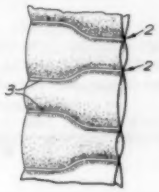
means for severing the elastic ribbon across the open folds.

4,425,174

METHOD OF MAKING HEAT SHRINKABLE ARTICLES

Robert H. McLoughlin, Highworth, Nr. Swindon, England, assignor to Raychem Limited, England

Filed Sep. 16, 1981, Ser. No. 302,887
Claims priority, application United Kingdom, Sep. 17, 1980, 8030020
Int. Cl.³ B29D *23/00*; B32B *31/04*
U.S. Cl. 156—218 11 Claims



1. A process for the production of heat shrinkable articles which comprises:

forming bonds between regions of at least two superimposed lengths of polymeric material to produce a bonded article comprising at least two hollow articles, at least part of each hollow article lying between two bonded portions disposed along the lengths of polymeric material, and each of the said bonded portions being disposed transversely of the lengths of polymeric material;

cross-linking the hollow articles and the bonds between the said lengths of polymeric material;

heating the hollow articles;

stretching the lengths of polymeric material longitudinally; and

cooling the hollow articles in the stretched condition to stabilise the hollow articles in a heat shrinkable state.

4,425,175

METHOD FOR CONTINUOUSLY PRODUCING A FLEXIBLE DRYWALL JOINT FILLER

Dan B. Moore, P.O. Box 1060, Huntington, W. Va. 25701

Filed Apr. 12, 1982, Ser. No. 367,669
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—229 27 Claims

17. A method of continuously producing a flexible drywall joint filler having a raised central spline portion adapted for cooperation with a joint defined between a pair of adjacent drywall panels and a pair of substantially thin edge portions extending the entire length of the joint filler for forming a substantially smooth surface with each exposed face of the drywall panels, the method comprising the steps of:

(a) extruding at a predetermined extrusion rate a continuous strip of molten flexible material at a predetermined extrusion width to pre-form the raised central spline and edge portions;

(b) pulling the material extruded according to step (a) at a pulling rate greater than the extrusion rate to axially stretch the pre-formed strip to reduce the extrusion width by about 30–65% to a final width;

(c) cooling the flexible strip material by passing the strip having said final width through a liquid bath and controlling the temperature of the bath to effect equalized cooling of the central portion and edge portions;

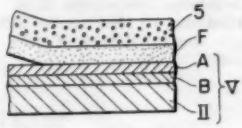
(d) applying a pressure-sensitive adhesive to the side of the flexible strip having the central portion formed thereon;
(e) covering said side having adhesive applied according to step (d) with a removable flexible backing material to prevent bonding of the flexible strip prior to use; and
(f) cutting the flexible strip into predetermined lengths.

4,425,176

PRESSURE SENSITIVE ADHESIVE PRODUCTS AND THE METHOD FOR PREPARATION OF THE SAME

Tomishi Shibano, Tama; Sachio Maruchi, Tokyo; Koji Yakan, Tanashi; Tadashi Kobayashi, Tokyo, and Saburo Akimoto, Yokohama, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Division of Ser. No. 90,605, Nov. 2, 1979, Pat. No. 4,339,485. This application Mar. 19, 1982, Ser. No. 360,002
Claims priority, application Japan, Nov. 9, 1978, 53-137350; Dec. 12, 1978, 53-152628; May 18, 1979, 54-60336; May 21, 1979, 54-61513
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—244.11 **6 Claims**



1. A method of preparing pressure sensitive adhesive products having one or more release layer and poly acrylate-based pressure sensitive adhesive layer, which comprises co-extruding a release layer consisting of a polyolefinic elastomer having a shearing modulus of less than 2.0×10^8 dyne/cm^2 according to JIS K 7213 test and surface wettability expressed in terms of an equilibrium contact angle of more than 55° with respect to a standard liquid having a surface tension of 50 dyne/cm and used in JIS K 6768 test under the conditions of 20±1° C. and 65±5% RH and olefinic resin forming a reinforcing interlayer for increasing the adhesion between a backing substrate and said release layer such that said elastomer is coated to a thickness of at least 1 micron, said elastomer forming said release layer being bonded to said substrate through said reinforcing interlayer, and said elastomer forming said release layer is kept in contact with said pressure sensitive adhesive layer over a given area to form a composite or integral layer thereof.

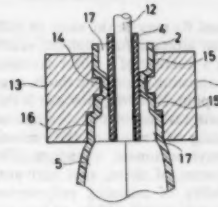
4,425,177

MEDICAL BAG AND METHOD OF MANUFACTURING THE SAME

Koji Shinno, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,889
Claims priority, application Japan, Mar. 26, 1982, 57-48258
Int. Cl.³ B29C *27/02*; b65B *7/28*
U.S. Cl. 156—272.2 **2 Claims**

1. A method of manufacturing a medical bag formed by jointing two transparent or translucent sheets at their peripheral edges in a sealing manner and having a liquid charging-/discharging tube welded between the jointed edges of said sheets so as to provide a fluid communication between the interior and exterior of said bag, comprising the steps of: placing said tube at a predetermined portion between the inner sides of two sheets; inserting a core mold for high frequency welding within the said tube; preparing a heating mold having a central first land of an inside diameter slightly smaller than the sum of the outside diameter of said tube and the thicknesses of said sheets, and at least one second land disposed at each side of said first land, the inside diameter of each said second land being greater than the diameter of said first land, whereby only one of the said second lands has an inside diameter slightly greater than that of said first land; pressing said edges of said sheets with said tube interposed therebetween by means of said heating mold and applying a high-frequency wave to said heating mold to melt said tube and said sheets, so that parts of molten materials of said tube and said sheets are forced by said first land to flow to both sides of said first land through the gap



between said tube and said sheets so as to fill small spaces defined between said tube and said sheets in the area surrounded by each second land; whereby said sheets and said tube are welded at a welded sealing portion which includes a central primary weld region formed by said first land of said heating mold and secondary weld regions formed by said second lands at both sides of said primary weld region.

4,425,178

RESIN HARDENER AND METHOD FOR ITS USE

William C. Grendon, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 16, 1981, Ser. No. 321,361
Int. Cl.³ C09J *5/02*
U.S. Cl. 156—307.3 **15 Claims**

1. The method of bonding wood comprising:
a. providing a curable phenol-resorcinol-formaldehyde resin having a water dilutability of at least 1 to 1;
b. further providing a water dispersible hardener comprising a finely powdered filler material, a thickening agent effective in an aqueous environment, a methylene group donor consisting of paraformaldehyde, alpha-polyoxymethylene or mixtures thereof, and a sufficient amount of a solid acidic material to adjust the pH of the hardener within the range of 4.0 to 5.5 when the hardener is dispersed in water;
c. making an aqueous slurry of the hardener.
d. blending a sufficient amount of slurried hardener with the resin to make a phenol-resorcinol-formaldehyde adhesive curable at room temperature.
e. spreading at least one wood surface with the adhesive; and
f. joining the spread surface to another wood surface and maintaining the surfaces in contact until bonding occurs.

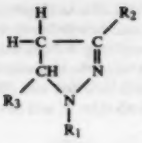
4,425,179

ADHESIVE COMPOSITIONS

Herbert Bauer, Lutry, Switzerland, and Gerhard Piestert, Schwetzingen, Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Oct. 21, 1980, Ser. No. 199,349
Int. Cl.³ C09J *5/02*
U.S. Cl. 156—307.5 **15 Claims**

1. An activator composition which comprises a dispersion of a substituted pyrazoline compound conforming to the following formula:



in which R_1, R_2 and R_3 may be the same or different and may be hydrogen, or an aromatic or aliphatic residue, and a promoter comprising a mixture of a sulfur containing compound chosen from the consisting of organic thiols, organic disulfides, organic sulfur compounds having nitrogen in their molecule or mixtures of these and a transition metal compound chosen from the group consisting of vanadium (III) acetonyl acetonate, copper (II) acetonyl acetonate, vanadium (IV) oxide-acetyl acetonate or mixtures of these, said activator composition having the capability of initiating polymerization at room temperature on combination with a polymerizable adhesive composition to provide a cured adhesive composition where said polymerizable adhesive composition comprises a source of free radicals and an ethylenically unsaturated monomer selected from the group consisting of diacrylates or dimethacrylates of mono, di, tri or tetraethylene glycol, trimethacrylates from trihydric alcohols, hydroxy and glycidyl terminated esters of acrylic and methacrylic acid and reaction products of these having two or more acrylate or methacrylate terminal groups, acrylates and methacrylates derived from epoxy resins and, mixtures of these monomers.

14. A method of adhesively bonding two air-impervious substrates at ambient temperature which comprises the steps of

(a) applying to a surface of one or both of the substrates an activator composition of claim 1.

(b) allowing the applied composition to dry,

(c) applying to one of the surfaces carrying the applied activator composition a polymerizable composition comprising an ethylenically unsaturated monomer and a source of free radicals,

(d) pressing the substrates together with the polymerizable and activator compositions in intimate contact with exclusion of air and

(e) allowing polymerization of the monomer to form an adhesive bond between the surfaces.

4,425,180

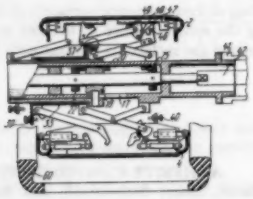
TIRE CASING ASSEMBLY DRUM

Jury I. Samokhvalov; Vladimir A. Kim, and Engels K. Golovkin, all of Yaroslavl, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Konstruktorsky Institut Po Oborudovaniju Dlya Shinnoi Promyshlennosti, Yaroslavl, U.S.S.R.

Filed Jul. 8, 1981, Ser. No. 281,354

Int. Cl.³ B29H *17/16*

U.S. Cl. 156—415 **4 Claims**



1. A tire casing assembly drum comprising:

a central hollow shaft; a plurality of sectors disposed about said shaft, each sector having movable shoulders on its inner surface;

a drive system comprising a screw having unidirectional threads disposed within said shaft and inner and outer slide-blocks arranged concentrically with each other on said shaft and connected to said screw to be axially reciprocable along said shaft;

means effecting the radial traversing of each of said sectors comprising a pair of parallel levers of equal length, each pair of levers articulately connecting one of said slide-blocks and one of said sectors and;

a link articulately connecting the midpoint of one lever of said pair of levers to the shaft, the length of said link equalling half the length of the lever connected thereto;

one of said levers of that pair of levers connected to the inner slide-block being provided with a contoured cam and a kinematic connection between said cam and the shoulders of the associated sector operable to traverse said shoulders relative to said sector at the beginning and end of the radial traversing of said sector.

4,425,181

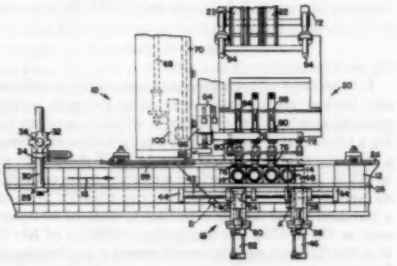
OUTSERT APPLICATOR APPARATUS

Melford J. Bahr, Corcoran; Cyril A. Ehalt, Plymouth, and Wayne R. Geist, Rogers, all of Minn., assignors to MGS Machine Corporation, Minneapolis, Minn.

Filed Mar. 19, 1982, Ser. No. 359,862

Int. Cl.³ B65C *9/14, 9/36*

U.S. Cl. 156—497 **5 Claims**



5. Apparatus for applying outserts to containers, comprising:

means for advancing the containers along a predetermined input path;

means located along the input path for positioning at least one container to receive an outsert;

magazine means for holding the outserts to be applied, said magazine means being located in spaced relationship with the input path across from said positioning means;

a glue pot located between said magazine means and the container located by said positioning means;

transfer means, attached to supporting means, for receiving the outsert from said magazine means and individually applying an outsert to the container positioned in the input path, said transfer means including:

a pair of spaced apart rails disposed approximately perpendicular with respect to said container path;

a slide block for sliding along said rails;

an arm rotatably supported by said slide block;

a cup and means for drawing a vacuum with said cup, said cup supported by said arm, said cup for holding said insert as it moves between the retracted position adjacent to said magazine means and the extended position adjacent to a container on the input path;

means for linearly moving said slide block, said moving means being coupled to said arm extending from said slide block;

a plurality of drive pins secured to said supporting means;

a pinion attached to said arm for cooperating with said drive pins;

means for applying glue from said glue pot to said outsert as said outsert is moved by said transfer means;

whereby linear movement of said arm by said moving means causes said pinion to engage said pins and rotate said arm thereby resulting in composite linear and rotational cup movement.

4,425,182

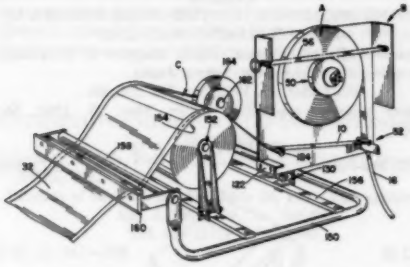
BLENDING TAPE DISPENSER

Wallace R. Jones, Waite Hill Village; John F. Haas, Chagrin Falls, and Sal Ferro, Sagamore Hills, all of Ohio, assignors to The Excello Speciality Co., Cleveland, Ohio

Filed Apr. 6, 1981, Ser. No. 251,479

Int. Cl.³ B32B *31/08;* B44C *7/02*

U.S. Cl. 156—554 **18 Claims**



1. A layered blending tape dispensing apparatus comprising in combination:

a roll of layered blending tape including a hollow core and an elongated length of blending tape wrapped spirally around the core, the blending tape including a mask layer having one surface coated by an adhesive layer, an elongated mask section adhered to a portion of the adhesive layer generally along one side edge of the mask layer and extending longitudinally thereof, and an elongated release strip adhered to the remaining portion of the adhesive layer and extending longitudinally thereof, said release strip being selectively removable from said adhesive layer remaining portion;

a frame to which an axle is operatively connected;

a tape mounting hub which frictionally receives the hollow core and which is rotatably mounted on the axle;

a tape roll retainer, the retainer including a first end which is received by one portion of the frame, a second end which is removably received by another portion of the frame, and an elongated spring section extending between the first and second ends, the elongated spring portion extending transverse to the axle adjacent one side face of the roll of tape;

a braking means for selectively controlling the angular velocity of the hub for eliminating backlash of the blending tape during tape dispensing; and,

separating means disposed adjacent the hub for automatically separating the release strip from the adhesive layer.

4,425,183

METAL BEVEL PROCESS FOR MULTI-LEVEL METAL SEMICONDUCTOR APPLICATIONS

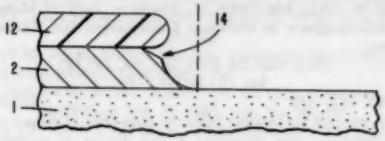
George Maheras, Fort Collins, and Hubert O. Hayworth, Loveland, both of Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 8, 1983, Ser. No. 521,509

Int. Cl.³ C23F *1/02;* C03C *15/00, 25/06;* B44C *1/22*

U.S. Cl. 156—651 **8 Claims**

1. A process for beveling the corner formed at the interface between a patterned metallic material layer and an overlying mask material layer implemented during the processing of an integrated circuit wafer, comprising the step of:



etching both the metallic material and masking material using an isotropic etchant which removes masking material at a rate measurably faster than the etchant removes the metallic material.

4,425,184

METHOD OF FORMING A DECORATIVE SURFACE ON A BODY OF GLASS

Salvatore Guerra, Detroit; John H. Meyer, Milford, and Thomas E. Boller, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1983, Ser. No. 481,427

Int. Cl.³ B44C *1/22;* C23F *1/00*

U.S. Cl. 156—655 **2 Claims**

1. A method of forming a decorative surface on one side of a sheet of soda/lime silica glass which comprises the steps of:

forming a multicomponent metallic oxide film on the one side of the sheet of soda/lime silica glass;

contacting the surface of the sheet of glass having said metallic oxide film thereon with an etchant acid bath containing at least hydrofluoric and nitric acids; and

interrupting contact between the surface of the glass sheet having said metallic oxide film thereon and said etchant acid bath when said etchant acid bath has reacted with said metallic oxide film to create a decorative surface on the sheet of glass, said decorative surface including a plurality of elongated lines generally intersecting with one another.

4,425,185

METHOD AND COMPOSITION FOR REMOVING NICKEL ALUMINIDE COATINGS FROM NICKEL SUPERALLOYS

Robert E. Fishter, Boca Raton; Henry Lada, Lake Park, and Victoria M. Putnam, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 18, 1982, Ser. No. 359,547

Int. Cl.³ C23F *1/02;* B44C *1/22*

U.S. Cl. 156—656 **4 Claims**

1. The method of removing a nickel aluminide coating from a wrought non-hardenable nickel base alloy characterized by contacting the article with an acid solution consisting essentially by volume percent of 43–45 concentrated nitric acid, 7–12 concentrated hydrochloric acid, 0.1–1.5 concentrated sulfuric acid, balance water; the solution also containing metal chloride and metal sulfate ions.

4,425,186

DIMETHYLAMIDE AND CATIONIC SURFACTANT DEBONDING COMPOSITIONS AND THE USE THEREOF IN THE PRODUCTION OF FLUFF PULP

Oscar W. May, and Philip M. Hoekstra, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Mar. 24, 1981, Ser. No. 247,187
Int. Cl.³ D21H *3/10*
U.S. Cl. 162—158 23 Claims

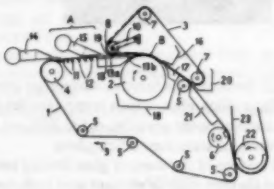
1. A process for treating cellulose pulp fiber to reduce interfiber bonding, thus imparting a low degree of mechanical strength to webs formed therefrom, while at the same time, preserving good hydrophilic properties of said fiber which comprises adding to the cellulose pulp fiber slurry prior to or during the formation of the slurry into a web, a mixture comprising 10 to 90 weight percent of a cationic surfactant and 90 to 10 weight percent of a dimethylamide of a straight chain carboxylic acid characterized in that said carboxylic acid contains from 12 to 18 carbon atoms in an amount varying from 0.1 to 2.0 parts per 100 parts of said cellulose pulp fiber based on the dry weight of said fiber.

4,425,187

TWIN-WIRE PAPERMAKING MACHINE

Frederick R. Armstrong, Centerville, Mass.; Heinz Braun; Alfred Bubik, both of Ravensburg, Fed. Rep. of Germany; Helmut Störr, Berg, Fed. Rep. of Germany, and Karl Turobin-Ort, Meckenbeuren, Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,469
Claims priority, application Switzerland, Apr. 8, 1981, 2358/81
Int. Cl.³ D21F *1/36, 1/40*
U.S. Cl. 162—299 8 Claims



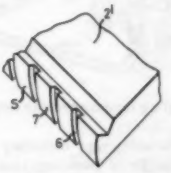
1. A twin-wire papermaking machine comprising:
a first wire at which there is formed a first fiber ply;
said first wire moving in a predetermined direction of travel and defining a wire loop;
a second wire positioned to be brought together with the first wire;
a first headbox for infeeding a stock suspension for forming said first ply at said first wire;
means defining a pre-dewatering path arranged following the first headbox for dewatering the first fiber ply essentially downwardly at the first wire;
said means defining said pre-dewatering path comprising at least a portion of said first wire;
said second wire coming into contact with the first wire at a predetermined inbound location;
a second headbox for infeeding a stock suspension arranged at an end of pre-dewatering path forwardly of said inbound location of said wire;
means arranged following the second headbox and defining a dewatering path for dewatering a fiber ply essentially upwardly;
said means defining said dewatering path for essentially upwardly dewatering the fiber ply comprising a substantially curvilinearly extending common portion of both said first and second wires;
a dewatering element defining an essentially water impervious guide path over which there is guided said common portion of said first and second wires;
said dewatering element being arranged in the wire loop of said first wire;
a slide shoe arranged upstream of said dewatering element with respect to the direction of travel of said first wire for guiding said first wire;
said slide shoe possessing a water impervious support surface for said first wire; and
said water impervious support surface extending upstream out of the region of the inbound location of said second wire with respect to said direction of travel of the first wire past an impact location of the stock suspension efluxing out of the second headbox and directed towards the first wire.

4,425,188

FORMING SHOES FOR THE TWIN-WIRE FORMER OF A PAPER MAKING MACHINE

Haruyoshi Fujiwara, Mihara, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,604
Claims priority, application Japan, Mar. 28, 1981, 56-44016[U]
Int. Cl.³ D21F *1/36, 1/54*
U.S. Cl. 162—300 2 Claims



1. In a twin wire former of a paper making machine having two wires extending in a longitudinal direction for guiding a raw paper material liquid therebetween and a plurality of longitudinally spaced forming shoes, one of the wires being supported on a surface of each of the shoes, the improvement wherein each of said forming shoes has a plurality of transversely spaced grooves in said surface, each of said plurality of grooves extending perpendicularly to its depth in a direction at an angle to said longitudinal direction less than 90° such that scraping pressure applied to said raw paper material liquid by said surface between said grooves is released by said raw paper material liquid into said grooves, said grooves creating a pressure difference in said raw paper material liquid in a direction transverse to said longitudinal direction to produce a transverse flow of said raw paper material liquid, thereby to reduce the machine-direction to cross-machine-direction ratio of the fibers of the paper being formed.

4,425,189

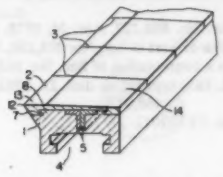
DEHYDRATING BLADE FOR PAPER MACHINE

Gen Mimura, Katsuta, Japan, assignor to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,693
Claims priority, application Japan, Mar. 25, 1981, 56-42783
Int. Cl.³ D21F *1/48, 1/54*
U.S. Cl. 162—352 12 Claims

1. A dehydrating blade for a paper machine comprising a surface portion made of ceramics and a base portion made from a synthetic resin material and having a hollow portion on the undersurface thereof, said surface portion having at least two projecting portions on the undersurface thereof for burying them in said base portion, said two projecting portions forming a groove therebetween, and a reinforcing material being buried in said base portion and the top portion of the reinforcing

material contacting with the undersurface of the surface portion and placed in said groove formed by the projecting portions of the surface portion, wherein the reinforcing material is made of steel and in the form of the letter "T", wherein the



base portion has a plurality of slits, with the slits being formed substantially perpendicular to the longitudinal direction of the base portion, and wherein the slits are formed with a constant distance alternately on one side and then on the other side of the base portion separated by the reinforcing material.

4,425,190

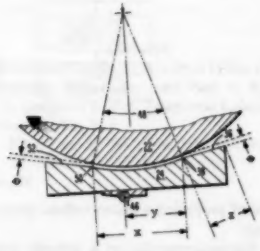
EXTENDED NIP SHOE FOR A NIP IN A PAPERMAKING MACHINE

Dennis C. Cronin, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 267,397, May 26, 1981. This application Apr. 5, 1982, Ser. No. 365,860

Int. Cl.³ D21F *3/06, 3/00*

U.S. Cl. 162—358 **10 Claims**



1. A system in a papermaking machine applying a compressive force to a web of paper comprising:

a rotating press roll;

compliant means for transporting the web of paper around a portion of the press roll;

means for applying a film of lubricant to the compliant means for transporting; and

means for compressing the compliant means for transporting against the press roll, the means for compressing having a shoe to maintain the film of lubricant along the interface of the means for compressing and the compliant means for transporting, the shoe including:

an inrunning surface extended approximately 1°-5° from a line substantially tangent to a load arc, formed by the shoe against the press roll, through the point where the load arc intersects an inrunning nip point created by the shoe and press roll;

an outrunning surface extended approximately 1°-5° from a line substantially tangent to the load arc, formed by the shoe against the press roll, through the point where the load arc intersects an outrunning nip point created by the shoe and press roll;

means for controllably distributing the release of the compressive force on side edge portions of the compliant transport system; and

means for advancing the shoe toward the rotating press roll.

4,425,191

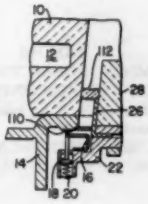
ARRANGEMENT FOR MINIMIZING LEAKAGE FROM HEATED CHAMBERS AND METHOD FOR MAKING SAME

Joseph M. Evans, Murrysville, Pa., assignor to Silicon Technology Incorporated, Greensburg, Pa.

Continuation of Ser. No. 24,905, Mar. 29, 1979, abandoned. This application Sep. 11, 1981, Ser. No. 301,197

Int. Cl.³ C09K *3/10*; C10B *25/16*; E06B *7/16*; F27D *1/18*

U.S. Cl. 201—41 **9 Claims**



1. A heated chamber having at least one opening, closure means for closing said at least one opening, said closure means at least a closed and open position, said closure means and said opening having surfaces disposed for coming into proximity of one another in said closed position, said surfaces forming a primary sealing means for said heated chamber in said closed position, there being a substance applied to at least one of said proximate surfaces, said substance being an intumescent substance which foams and expands upon the application of heat, thereby forming a secondary sealing means between said proximate surfaces in said closed position, when said substance is in a foamed and expanded condition, said substance consisting essentially of a liquid silicate.

4,425,192

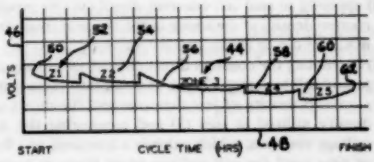
METHOD OF FORMING BATTERY ELECTRODES

Larry F. McKinley, Atlanta, Ga., assignor to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 447,589, Dec. 7, 1982, abandoned. This application Jun. 17, 1983, Ser. No. 504,595

Int. Cl.³ H01M *4/04, 10/44*

U.S. Cl. 204—2.1 **4 Claims**



1. A method of forming battery electrodes, comprising the steps of:

placing said battery electrodes in an electrolyte solution;

connecting said battery electrodes to a source of electrical current; and

controlling said source of electrical current to provide said current for forming said battery electrodes in at least three discrete sequential predetermined constant-current levels, an intermediate one of said at least three discrete sequential predetermined constant-current levels being greater than a first predetermined constant-current level preceding said intermediate one of said at least three constant-

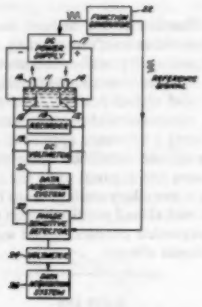
current levels and being greater than a second predetermined constant-current levels following said intermediate one of said at least three constant-current levels, said second predetermined level being lesser than said first predetermined level, to provide an approximately-constant voltage across said battery electrodes.

4,425,193

ELECTROCHEMICAL PREDICTION OF CORROSION SUSCEPTIBILITY OF ZIRCONIUM-BASE ALLOYS

Dale F. Taylor, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,308
Int. Cl.³ G01N *27/46, 27/30*
U.S. Cl. 204—1 T 30 Claims



16. An electrochemical process for predicting the ability of a zirconium-base alloy body to resist nodular corrosion in a boiling water nuclear reactor during normal operation, comprising the steps of:

(1) chemically polishing a pre-determined area of a surface of said alloy body,

(2) making said pre-determined area the anode in an electrochemical cell,

(3) applying to said cell constant direct current providing a current density at the anode in the range of from about 0.1 mA/cm^2 d-c to about 10 mA/cm^2 d-c,

(4) decreasing the constant direct current previously applied to said cell by a step-change to a constant value providing a current density of less than one-half the direct current density utilized in step (3) and monitoring the d-c cell voltage response, which exhibits a transient, as a function of time until the cell voltage again starts to increase in value,

(5) re-applying to said cell a value of constant direct current providing a current density in the range of from 0.1 mA/cm^2 d-c to about 10 mA/cm^2 d-c and measuring the degree of non-linearity occurring in the relationship between d-c voltage and time,

(6) measuring the value of the transient voltage, the depth of the minimum occurring as the d-c cell voltage varies with time,

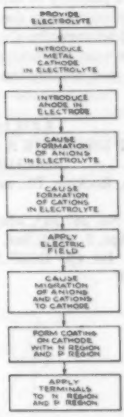
(7) comparing the values obtained in steps (5) and (6) to standardized values to determine the corrosion susceptibility of said alloy body.

4,425,194

PHOTO-VOLTAIC POWER GENERATING MEANS AND METHODS

Ferdinand A. Kroger, Los Angeles; Robert L. Rod, Marina del Rey; Ramachandra M. P. Panicker, Camarillo, all of Calif., and Mark B. Knaster, Ambler, Pa., assignors to Monosolar, Inc., Calif.

Continuation of Ser. No. 899,227, Apr. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 883,150, Mar. 3, 1978, abandoned, which is a continuation of Ser. No. 693,890, Jun. 8, 1976, abandoned. This application Jan. 21, 1983, Ser. No. 460,013
Int. Cl.³ H01L *31/18, 31/06*
U.S. Cl. 204—2.1 32 Claims


PROVIDE ELECTROLYTE
INTRODUCE METAL CATHODE IN ELECTROLYTE
INTRODUCE ANODE IN ELECTRODE
CAUSE FORMATION OF ANIONS IN ELECTROLYTE
CAUSE FORMATION OF CATIONS IN ELECTROLYTE
APPLY ELECTRIC FIELD
CAUSE MIGRATION OF ANIONS AND CATIONS TO CATHODE
FORM COATING ON CATHODE WITH N REGION AND P REGION
APPLY TERMINALS TO N REGION AND P REGION

1. A method of preparing a photo-voltaic power generating cell comprising:

depositing electrochemically on a suitably prepared metal electrode adapted to form a Schottky barrier a coating of a semiconductor compound from an electrolytic bath including the components of said semiconductor compound, said compound being capable of forming a Schottky barrier with said electrode, being transmissive to light radiation and being capable of forming electron-hole pairs upon being irradiated with photons, said components being formed of at least one of the metal elements of Class IIB and non-metal elements of Class VIA of the Periodic Table of Elements.

15. The process of manufacturing an n-p heterojunction photo-voltaic device utilizing a semiconductive substrate of a first conductivity type, comprising the steps of:

immersing the substrate into an electrolyte comprising cadmium sulfate at an acid pH;

providing an anode having at least a tellurium coating;

applying a voltage between the cathode formed by the substrate and the anode, the voltage being negative between the cathode and a calomel reference electrode so as to deposit an opposite conductivity type thin polycrystalline cadmium telluride layer; and

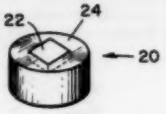
continuing the plating until the layer has a predetermined thickness, whereby an n-p heterojunction is provided between the substrate of a first conductivity type and the plated cadmium tellurium layer of the opposite conductivity type.

4,425,195

METHOD OF FABRICATING A DIAMOND HEAT SINK

Nicolas A. Papanicolaou, Silver Spring, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Nov. 10, 1982, Ser. No. 440,784
Int. Cl.³ C25D *1/20, 5/02, 5/12*
U.S. Cl. 204—3 **11 Claims**



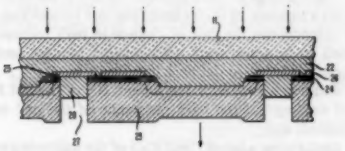
1. A method of fabricating a diamond heat sink comprising the steps of:
(a) metalizing a diamond;
(b) temporarily attaching said diamond to a base plate;
(c) coating the exposed surfaces of said diamond with a primary metallic layer to provide a metallic base; and
(d) separating said base plate from said diamond thereby leaving as a diamond heat sink said diamond and said primary metallic layer.

4,425,196

PHOTOELECTROCHEMICAL PLATING OF SILVER

Jeffrey R. Bessette, Piscataway, and Paul A. Kohl, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 3, 1982, Ser. No. 414,606
Int. Cl.³ C25D *5/02, 3/46*
U.S. Cl. 204—15 **23 Claims**



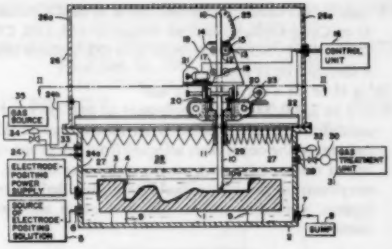
1. A process for fabricating devices comprising at least one n-type or intrinsic compound semiconductor material comprising the step of plating silver on a metallic surface electrically connected to the III-V compound semiconductor by an oxidation-reduction reaction in an electrolytic solution characterized in that
a. the oxidation is carried out by illuminating the III-V compound semiconductor so as to create holes that permit oxidation of the semiconductor,
b. the electrolytic solution comprises a source of silver which on reduction yields metallic silver in which the reduction potential of the source of silver in the electrolytic solution is between the potential of the valence band maximum in the electrolytic solution and the potential of the conduction band minimum in the electrolytic solution, and
c. the source of silver is reduced on the metallic surface to form metallic silver.

4,425,197

METHOD OF AND APPARATUS FOR ELECTRODEPOSITING A METAL ON A CONDUCTIVE SURFACE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 18, 1982, Ser. No. 409,130
Claims priority, application Japan, Aug. 19, 1981, 56-128805; Jun. 28, 1982, 57-110033
Int. Cl.³ C25D *5/04, 7/04, 17/00*
U.S. Cl. 204—25 **19 Claims**



1. A method of electrodepositing a metal upon an electrically conductive surface, comprising the steps of:
(a) accommodating, in an essentially hermetically sealed receptacle, a workpiece having a surface to be electrodeposited;
(b) positioning electrode means in spaced juxtaposition with said surface of said workpiece in said receptacle;
(c) flooding an electrodepositing solution into at least the region of a gap between said electrode means and the workpiece within said receptacle;
(d) passing an electrodepositing current between said electrode means and said workpiece to electrodeposit said metal from said solution at least predominantly on a limited area of the workpiece surface juxtaposed with the electrode means while permitting gases to be electrolytically produced from said gap and together with any mist of the solution, to be collected as a gaseous effluent in a space within said receptacle;
(e) relatively displacing said workpiece and said electrode means by operating drive means disposed outside said receptacle and drivingly connected with at least one of said workpiece and said electrode means so as to cause said limited area of at least predominant electrodeposition to sweep progressively over said workpiece surface within said receptacle;
(f) withdrawing, under suction, said gaseous effluent being collected in said space from said receptacle to the exterior thereof; and
(g) introducing fresh atmospheric air into said room under said suction withdrawing said gaseous effluent from said receptacle.

4,425,198

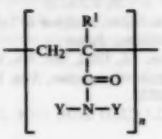
BRIGHTENING COMPOSITION FOR ZINC ALLOY ELECTROPLATING BATH AND ITS METHOD OF USE

Sylvia Martin, Detroit, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Jun. 16, 1981, Ser. No. 274,085
Int. Cl.³ C25D *3/56*
U.S. Cl. 204—43 Z **7 Claims**

1. An aqueous zinc alloy electroplating bath having a pH of from about 0 up to about 6.5 and comprising about 7 to about 165 g/l zinc ions, at least one of nickel ions and cobalt ions individually present in an amount of about 1 to about 60 g/l, about 0.5 to about 200 mg/l aluminum ions, and an effective

amount of a brightener comprising a bath soluble polymer of the formula:



wherein:

Y may be the same or different and is R or RX, where R is H or C_{1-10} aliphatic radical, where X is H, OH, $COOR^1$, $COON[R^1]_2$, SO_3M, CN, $N[R^1]_2$ or OR^1, where M is H or a Group I or II metal;

R^1 is H or C_{1-4} alkyl radical; and

n is 2 to 2,000,000; and copolymers of said polymer and a solubilizing agent present in an amount up to 25 mole percent of the copolymer selected from the group consisting of methacrylic acid, acrylic acid, acrylonitrile, methacrylonitrile, vinyl C_{1-5} alkyl esters, vinyl halide, epihalohydrin, vinulidine halide, alkylene oxide and mixtures thereof.

4,425,199

PROCESS FOR THE PREPARATION OF (ω-FLUOROSULFONYL)-HALOALIPHATIC CARBOXYLIC ACID FLUORIDES

Masato Hamada; Jukichi Ohmura, both of Yokohama, and Fumio Muranaka, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,676

Claims priority, application Japan, Apr. 2, 1981, 56-48383

Int. Cl.³ B01K *3/00*; C07C *143/70*

U.S. Cl. 204—59 F **6 Claims**

1. A process for the preparation of an (ω-fluorosulfonyl)-haloaliphatic carboxylic acid fluoride which comprises subjecting to electrolysis an electrolyte comprising a compound represented by the formula:

$$\underbrace{OCH_2(CX_1X'_1CX_2X'_2 \cdots CX_nX'_n)SO_2}_{} \quad (I)$$

wherein n is an integer of from 1 to 4, X_1 through X_n and X'_1 through X'_n each independently stand for H, Cl or F, and liquid hydrogen fluoride in an electrolytic cell to effect electrolytic fluorination of said compound, thereby to obtain an (ω-fluorosulfonyl)haloaliphatic carboxylic acid fluoride represented by the formula:

$$FSO_2(CZ_1Z'_1CZ_2Z'_2 \cdots CZ_nZ'_n)COF$$

wherein Z_1 through Z_n and Z'_1 through Z'_n each independently stand for F or Cl, and n is as defined above.

4,425,200

METHOD AND APPARATUS FOR STABILIZING ALUMINUM METAL LAYERS IN ALUMINUM ELECTROLYTIC CELLS

Yoji Arita, Yokohama, Japan, assignor to Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,066

Claims priority, application Japan, Oct. 8, 1981, 55-140918

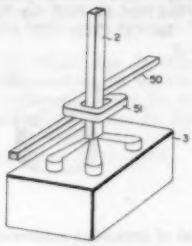
Int. Cl.³ C25C *3/06*, *3/08*, *3/20*

U.S. Cl. 204—67 **8 Claims**

1. A method of stabilizing an aluminum metal layer in a prebaked anode type aluminum electrolytic cell comprising the steps of:

horizontally disposing a ferromagnetic member in a magnetic field created by a current passing through said electrolytic cell, and

magnetizing said ferromagnetic member with a horizontal



component of said magnetic field so as to form a magnetic field containing a vertical component that decreases a gradient of a vertical component of said first mentioned magnetic field.

4,425,201

METHOD FOR IMPROVED ALUMINA CONTROL IN ALUMINUM ELECTROLYTIC CELLS

Claude A. Wilson, Rio de Janeiro, Brazil, and Alton T. Tabereaux, Sheffield, Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jan. 27, 1982, Ser. No. 343,210

Int. Cl.³ C25C *3/06*, *3/20*

U.S. Cl. 204—67 **4 Claims**

1. A method for controlling the amount of alumina fed to a reduction cell so as to avoid overfeeding or underfeeding of the cell comprising the steps of:

(a) experimentally intentionally over-and-under-feeding a control cell of the type of the cell to be controlled under controlled conditions to determine statistically significant values of:

(i) a rate of change in bath control cell resistance with respect to time and alumina concentration to define a line slope, "g";

(ii) a statistical correlation coefficient of the last N number of readings of the resistance of the control cell, h; and

(iii) a number of hours since the last break/feed option y;

(b) determining the rate of change in bath resistance of the cell to be controlled with respect to time and alumina concentration to define a line slope, g;

(c) defining a statistical coefficient, R^2, of the last N number of readings of the bath resistance of the cell to be controlled; and

(d) performing a break/feed if all of the following conditions are met:

(I) the slope g is within the experimentally determined range of "g" volts/minute at a normalized line amperage;

(II) R^2 exceeds the experimentally determined limit h; and

(III) the last break/feed operation has not been performed in the last y hours.

4,425,202

METHOD OF MAKING AND COLOR STABILIZATION OF CHOLINE BASE

Edward A. Sullivan, Beverly, Mass., assignor to Thiokol Corporation, Chicago, Ill.

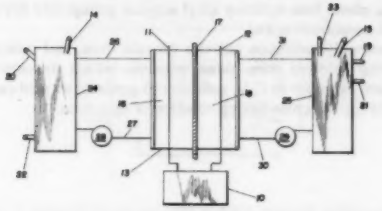
Filed Aug. 18, 1982, Ser. No. 409,194

Int. Cl.³ C25B *3/00*

U.S. Cl. 204—72 **11 Claims**

1. A process for producing a water-white colored aqueous solution of choline base that is resistant to discoloration in an electrolytic cell having an anode compartment containing an anode and a cathode compartment containing a cathode, said

anode and cathode compartments being separated by a cationic membrane capable of rejecting passage of essentially all halide ions from said anode compartment to the cathode compartment and capable of permitting passage of hydrated choline ions from said anode compartment to said cathode compartment, comprising: feeding a solution of choline halide into said anode compartment; feeding dilute aqueous choline base into said cathode compartment; adding a sulfite to a chamber of said electrolytic cell in an amount sufficient to make the choline base produced by the process resistant to discoloration;



establishing and maintaining a sufficient electrical potential between said anode and cathode to produce a flow of electrical current across said cell thereby causing halide ions to lose an electron at said anode, hyrated choline ions to migrate through said membrane from said anode compartment into said cathode compartment and to combine with hydroxide ions to form choline base that is essentially free of halide, and to dissociate water at the cathode to form hydrogen and hydroxide ions; and removing an aqueous solution of said choline base from said cathode compartment that contains impurities of $\leqq$1000 ppm halides and carbonates and $\leqq$15 ppm alkali metals.

4,425,203

HYDROGEN EVOLUTION CATHODE

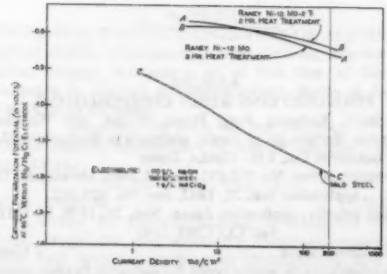
Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 301,681, Sep. 14, 1981, Pat. No. 4,374,712, which is a continuation-in-part of Ser. No. 80,745, Oct. 1, 1979, Pat. No. 4,289,650, which is a continuation-in-part of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application May 20, 1982, Ser. No. 380,155

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ C25B *1/04, 11/06*

U.S. Cl. 204—129 **8 Claims**



1. A method of generating hydrogen from a hydrogen evolution cathode in an electrolytic cell by passing an electric current through an aqueous electrolyte between an anode and a hydrogen evolution cathode, said cathode being comprised of a monolithic structure having a surface formed from an integral precursory, adherent Raney Beta phase quaternary alloy represented by the formula $Ni_xMo_yTi_zAl_3$, where x is the weight percent of nickel, y is the weight percent of molybdenum and z is the weight percent of titanium, in the combined weight of nickel, molybdenum and titanium, and where x ranges from about 75 to about 94 percent by weight, y ranges from about 20 to about 5 percent by weight and z ranges from about 5 to about 1 percent by weight, and which has had from about 75 to about 95 percent of the aluminum leached from said surface with a strong aqueous base so as to form an active porous Raney Beta phase nickel-molybdenum-titanium surface layer whereby the hydrogen overvoltage of said surface is reduced.

4,425,204

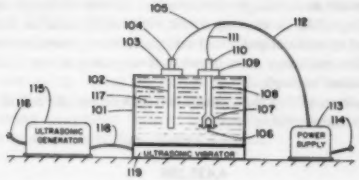
RAPID METHOD FOR THE ETCHING AND CLEANING OF DENTAL CASTING METALS

Gerald McLaughlin, 550 Rte. 25A, Rocky Point, N.Y. 11778

Filed Sep. 20, 1982, Ser. No. 420,014

Int. Cl.³ C25F *1/04, 3/02, 7/00*

U.S. Cl. 204—129.7 **8 Claims**



1. A system for accelerating the etching and cleaning of metal castings used in dental restoration, comprising the steps of:

(a) combining a liquid etchant and a cleaner to form a single bath for the metal to be cleaned and etched,

(b) providing a first and a second electrode for immersion in the bath, the electrodes being electrically conductive, but resistant to etching and cleaning effects of the bath,

(c) providing a direct current power supply, the positive potential output of the supply being connected to the first electrode while the negative potential output is connected to the second electrode, said direct current power supply limiting the current flow to less than 0.8 amperes per square centimeter of surface to be etched,

(d) connecting the dental casting to the first electrode, the connection making electrical contact from the supply to the casting by way of the first electrode,

(e) immersing the electrodes in the bath in separated positions which permit electrical current flow through the electrodes and the bath, the immersing of the electrodes places the metal casting in the bath, and

(f) applying ultrasonic vibrations to the bath, the vibrations being transmitted through the bath to the metal casting to accelerate the etching and cleaning action.

4,425,205

PROCESS FOR REGENERATING ELECTROLESS PLATING BATH AND A REGENERATING APPARATUS OF ELECTROLESS PLATING BATH

Hideo Honma, Yokohama; Yoshiaki Suzuki, and Yasuhiro Matsumoto, both of Yokosuka, all of Japan, assignors to Kanto Kasei Co., Ltd. and Facility Ltd., both of Kanagawa, Japan

Filed Apr. 27, 1982, Ser. No. 372,133

Claims priority, application Japan, Mar. 13, 1982, 57/39869; Apr. 23, 1982, 57/67364

Int. Cl.³ C02F *1/46;* **B01D** *13/02*

U.S. Cl. 204—151 **22 Claims**

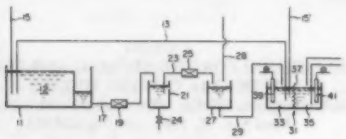
1. A process for regenerating electroless plating bath comprising the steps of:

(i) continuously or intermittently taking out a part or the whole chelating agent-containing copper electroless plat-

ing bath from an electroless plating tank, followed by removing off the copper ion content from said bath;

(ii) acidifying the thus obtained solution for precipitating the chelating agent therefrom and recovering the precipitated chelating agent;

(iii) supplying said recovered chelating agent to an anodic cell separated by an exchange membrane from a cathodic cell having cathode, said anodic cell having copper anode,



wherein in case a neutral or alkaline electrolyte solution is supplied to said cathodic cell said partitioning membrane is an anion exchange membrane or cation exchange membrane, while in case an acidic electrolyte solution is supplied to said cathodic cell said partitioning membrane is a cation exchange membrane and applying direct current between both electrode; and

(iv) then recycling the solution within said anodic cell to said electroless plating tank.

4,425,206

ANHYDROUS PROCESS FOR PREPARING AMORPHOUS CHLORINATED POLYETHYLENE AND PRODUCT THEREOF

Loyd B. Hutchinson, Denham Springs, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1982, Ser. No. 448,119
Int. Cl.³ C08F *8/22*
U.S. Cl. 204—159.18 **12 Claims**

1. An anhydrous free radical process for preparing amorphous chlorinated, solid, finely divided polyethylene particles; said process employing a free radical initiator, a flow of gaseous chlorine and agitation of the particles sufficient to expose generally all of said particles to the flow of gaseous chlorine, the process comprising a series of sequential steps:

(a) starting addition of gaseous chlorine to an agitated mass of porous, finely divided polyethylene particles, the particles being exposed to a free radical initiator, while said mass is at a temperature within a temperature range of from about 25° to about 50° Centigrade;

(b) continuing addition of gaseous chlorine to the agitated mass while continuing to expose the mass to a free radical initiator and while increasing the temperature of said mass over a temperature range of from about 50° Centigrade to about 105° Centigrade and maintaining the temperature within said temperature range until a level of chlorination of the agitated mass of from about 5 to about 15 percent by weight of said mass is attained;

(c) continuing addition of gaseous chlorine to the agitated mass while continuing to expose the mass to a free radical initiator and while further increasing the temperature of said mass to a temperature of from about 125° Centigrade to about 132° Centigrade, said temperature being increased at a rate which is sufficiently slow to preclude sintering of the agitated mass; and

(d) continuing addition of gaseous chlorine to the agitated mass while continuing to expose the mass to a free radical initiator and while further increasing the temperature of said mass to a temperature which is greater than about 130° Centigrade yet less than a temperature at which sintering of the agitated mass occurs and maintaining said temperature for a period of time sufficient to attain a predetermined level of chlorination and a predetermined level of relative crystallinity.

4,425,207

DUAL CURE COATING COMPOSITIONS

Rudolph H. Boeckeler, Grafton, and James R. Prom, Port Washington, both of Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Division of Ser. No. 208,856, Nov. 21, 1980, Pat. No. 4,377,457. This application Jan. 17, 1983, Ser. No. 458,304
Int. Cl.³ C08F *8/18*; C08G *18/00, 2/02*
U.S. Cl. 204—159.14 **8 Claims**

1. A coating composition comprising:

an epoxy modified polyester extended acrylate resin containing plural beta hydroxy alkyl acrylate groups and drying oil unsaturation; and

a photopolymerization initiator for said resin, said initiator being selected from those initiators which decompose upon exposure to U.V. radiation to generate an acid catalyst for the cross-linking reaction of said resin.

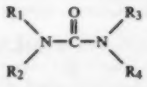
4,425,208

COMPOSITIONS AND PROCESS

Anthony F. Jacobine, Meriden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 6, 1981, Ser. No. 290,689
Int. Cl.³ C08F *2/48, 2/50*
U.S. Cl. 204—159.15 **11 Claims**

1. In a method for the photopolymerization of ethylenically unsaturated compounds selected from the group consisting of polymerizable ethylenically unsaturated monomers, oligomers and polymers, the improvement which comprises employing as the photoinitiator a combination of an aromatic ketone sensitizer and from 20 to 200 parts by weight, per 100 parts by weight of said aromatic ketone sensitizer, of a tetra-substituted urea of the formula:



wherein R_1, R_2, R_3 and R_4 taken individually represent members each of which is independently selected from the class consisting of lower-alkyl, cycloalkyl, aralkyl and aryl and R_1, R_2, R_3, and R_4 taken together with the N atoms to which they are attached also represent the residue of a heterocyclic moiety having from 2 to 8 ring atoms.

4,425,209

PHOTOSETTING RESIN COMPOSITIONS

Keiji Saeki, Kadoma; Junji Ikeda, Ikoma, and Wakahata Tamotsu, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 205,011, Nov. 7, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,862
Claims priority, application Japan, Nov. 21, 1979, 54-151214
Int. Cl.³ C08F *2/46*
U.S. Cl. 204—159.23 **2 Claims**

1. A photocurable solder resist for use with flexible printed circuit boards comprising from 10 to 20% by weight of a resin selected from the group consisting of epoxy (metha) acrylate and trimethylol propane triacrylate having at least three groups per molecule selected from acryloyl and methacryloyl groups, from 10 to 12% by weight of an ester (metha) acrylate having two groups per molecule selected from acryloyl and methacryloyl groups, and 32 to 42% by weight of 2-hydroxyethyl methacrylate and a sensitizer.

4,425,210

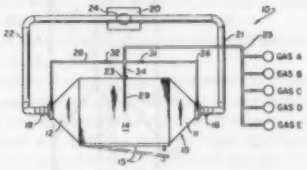
PLASMA DESMEARING APPARATUS AND METHOD

Fazal A. Fazlin, 11400 4th St. N. #101, St. Petersburg, Fla. 33702

Continuation-in-part of Ser. No. 204,329, Nov. 4, 1980, Pat. No. 4,328,081, which is a continuation of Ser. No. 124,468, Feb. 25, 1980, abandoned. This application Apr. 10, 1981, Ser. No. 253,007

Int. Cl.³ C23F *1/00*

U.S. Cl. 204—19 ZE 13 Claims



1. A method for desmearing objects inserted within a chamber, the chamber including pairs of electrodes spaced apart a sufficient distance to permit the insertion of one or more of the objects to be desmeared between adjacent electrode pairs, each electrode pair including a power electrode for receiving electrical energy and a ground electrode connected to ground, comprising the steps of:

evacuating the chamber to a very low pressure;

supplying a first amount of electrical energy at a radio frequency to the power electrode of a first electrode pair to create a primary electrical field between the power electrode and the ground electrode of the first electrode pair and a secondary electrical field between the power electrode of the first electrode pair and the ground electrode of a preceeding electrode pair;

supplying a second and greater amount of electrical energy at a radio frequency to the power electrode of a second and succeeding electrode pair to create a primary electrical field between the power electrode and the ground electrode of the second electrode pair and a secondary electrical field between the power electrode of the second electrode pair and the ground electrode of the first electrode pair; and

directing a flow of gas through the first electrode pair and then through the second electrode pair whereby the increased intensity of the electrical field created by the second electrode pair compensates for the saturation of the plasma gas flowing therethrough.

4,425,211

DEVICE FOR ELECTRODEPOSITION OF ALUMINUM

Siegfried Birkle, Hoechstadt; Johann Gehring, Spardorf, and Klaus Stoeger, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

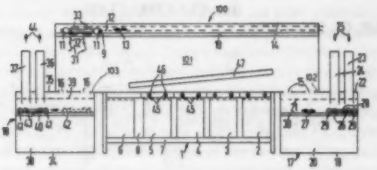
Filed Jun. 28, 1982, Ser. No. 393,198

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133162

Int. Cl.³ C25D *17/02, 21/02*

U.S. Cl. 204—198 20 Claims

1. A device for electrodepositing of aluminum from an aprotic, oxygen-free and water-free, aluminum-organic electrolyte, said device comprising an electroplating tank being subdivided into a plurality of identical individual cells for receiving a liquid and anode plates, each of said cells having a rectangular cross section and being positioned one after another in a line, said electroplating tank having a hood forming a protective chamber over the surface of the liquid in said cells, said chamber being closed to the outside and having means for providing a protective atmosphere in said chamber, each of said cells containing support means for electrically contacting and holding workpiece holders being disposed in the cell to present workpieces for contact with the liquid in the cell, said electroplating tank at one end of the row of cells having first lock means for forming a charging lock, and at the other end of the row of cells having second lock means for forming a discharging lock, each of said lock means including an antechamber, a liquid lock, and a principal chamber being connected to the protective chamber through closable openings so that a workpiece holder can be passed through the first lock means to



enter the tank and be removed from the tank through the second lock means without the protective atmosphere and liquid in the electroplating tank becoming contaminated by the ambient atmosphere outside of said tank, and said tank including conveying means for receiving workpiece holders from said first lock means and depositing them in the cells and for removing workpiece holders from said cells and transferring them to said second lock means.

4,425,212

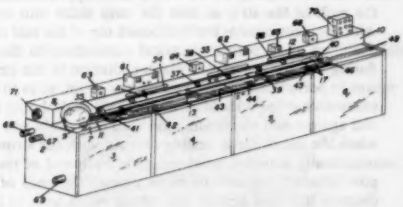
ELECTROPLATING DEVICE

William L. Francis, 18 Chimney Wood, Floyd Knobs, Ind. 47119

Filed Nov. 20, 1981, Ser. No. 323,441

Int. Cl.³ C25D *17/06, 17/28*

U.S. Cl. 204—202 15 Claims



1. Apparatus for electrically processing selected portions of elongate metallic articles to selectively electroplate a first portion including elongate moving transport means for travel along a selected path above a reservoir containing electroplating solution to retain said articles wherein said transport means including co-operating longitudinally aligned first and second conveyor belt means wherein selected portions of said first and second conveyor belt means are located in mutually opposed relation above said reservoir means wherein contact strips are provided on the opposed surfaces of said first and second belt means to extend outwardly from said first and second belts to engage each other and hold said articles to be electroplated therebetween and define a space between said first and second belt means to receive a second portion of said articles to be electroplated and where said articles to be electroplated are held between said first and second conveyor belt means with said first portion disposed in said electroplating solution and a second portion of each said article extends outwardly from an opposite side of said transport means, contact means disposed to contact said second portion of said articles when said first portion of said articles are located in said solution and source of direct current to be applied between said contact means and said electroplating means solution so current flows between

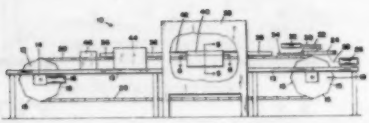
said contact means through said article and said electroplating solution.

4,425,213

DISCRETE LENGTH STRIP PLATER

Gerald Laverty, Santa Clara; August Kalin, Sunnyvale, and Michael Seyffert, Santa Cruz, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 22, 1982, Ser. No. 360,126
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—202 **6 Claims**



1. A plating system for plating selected parts of a series of discrete strips comprising:

a carrier means comprising a chain of links pivoted to each other for carrying said discrete strips on top of said links through said plating system;

a support housing disposed about said carrier chain so as to receive said chain therethrough;

a pair of plating heads, located one on each side of said carrier chain, and movable relative to each other so as to work cooperatively to close on and hold a discrete strip therebetween to permit plating of said selected parts of the strip, said plating heads supported in said housing so as to be movable into sealing contact with said strip, said heads including masking means thereon to cover parts of the strip and expose other selected parts, said heads also having passageways therein operable to convey plating solution to said selected parts during said sealing contact;

electrodes springably mounted on said support housing in the path of the strip so that the strip slides into contact with the electrodes as it advances on top of the said carrier chain, so as to permit electrical connection to the strip during the conveyance of plating solution to the strip;

means to periodically move said carrier chain, so as to bring successive strips on said chain between said plating heads and against said electrodes, and stop said chain and strips when the heads are in sealing contact with the strips; and

automatically actuated pawl means at each end of the support housing operable to move against the ends of each discrete strip and against the plating heads so as to locate the strip lengthwise relative to the plating heads.

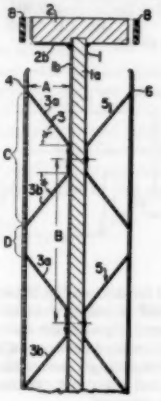
4,425,214

NOVEL BIPOLAR ELECTROLYZER

Alberto Pellegri, Luino, Italy, assignor to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 266,653, May 26, 1981, Pat. No. 4,389,298, which is a continuation-in-part of Ser. No. 128,972, Mar. 10, 1980, Pat. No. 4,279,731. This application Sep. 24, 1982, Ser. No. 423,279
Claims priority, application Italy, Nov. 29, 1979, 27690 A/79
Int. Cl.³ C25B *9/00, 11/03, 11/10*
U.S. Cl. 204—254 **3 Claims**

1. An electrolyzer comprising a plurality of bipolar elements adapted to be pressed together in a filter press type assembly, disposed alternately with ion permeable diaphragms therebetween, each bipolar element comprising a partition wall having the surface exposed to the catholyte of a catholyte resistant metal and the surface exposed to the anolyte of a valve metal, vertically oriented sheet metal baffles, electrically and mechanically connected, along one edge only, to the surface of the partition wall, distributed across the entire width of the partition wall and made of a catholyte resistant metal on the cathode side and of a valve metal on the anode side, the free edges of said baffles on the anode side being parallel to and offset with respect to the free edges of the baffles on the cathode side of the adjacent bipolar element, a planar, foraminous, flexible, anodically polarized electrode freely abutting against the free edges of said anode side baffles, a planar, foraminous, flexible cathodically polarized electrode freely abutting against



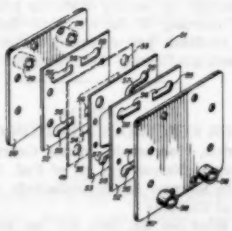
the free edges of said cathode side baffles, the plane of each of said baffles intercepting the planar, foraminous electrode at an angle of incidence equal or greater than 45°, before compression, permitting a relative sliding movement between the edges of said baffles and said planar foraminous electrodes when the bipolar elements are pressed together.

4,425,215

GAS GENERATOR

Richard W. Henes, Phoenix, Ariz., assignor to Henes Products Corp., Phoenix, Ariz.

Filed Sep. 27, 1982, Ser. No. 423,637
Int. Cl.³ C25B *9/00, 15/08*
U.S. Cl. 204—258 **6 Claims**



5. A gas generator assembly comprising in combination:

a pair of flat metal electrodes positioned in an aligned parallel array,

a pair of insulating spacer elements comprising frames encircling openings extending therethrough mounted between said pair of electrodes in said aligned parallel array,

a semipermeable membrane element comprising a substantial gas barrier mounted between said pair of insulating spacer elements,

each of said electrodes, spacer elements and membrane element having opposed end portions,

said electrodes, spacer elements and membrane element each being provided with a pair of spaced apertures extending therethrough in each of said end portions with similarly

positioned apertures in like end portions being interconnected in axial alignment,

a pair of first slots arranged in said end portions of said electrodes extending from said apertures toward the center of said electrodes,

each frame of said spacer elements being provided with a second slot extending laterally from one of said apertures in each of said end portions of said elements toward the center of said frame and communicating with said opening in said frame,

one of said first slots in each of said end portions of said electrodes being juxtapositioned to and overlapping a second slot in said spacer element, and

each spacer element being a reverse image of the next spacer element in the array,

said aligned apertures of said electrodes, said spacer elements and said membrane element in common end portions at one end thereof being connectable to a source of electrolyte which flows through these apertures, a first slot and associated second slot of each said spacer element and into the opening in each said spacer element between one of said electrodes and said membrane element and out said first slot and second slot at the other of said end portions of each said spacer element,

said aligned apertures of said electrodes, said spacer elements and said membrane element in common end portions at one end thereof serving as gas discharge ports.

4,425,216

GAS GENERATION APPARATUS

Calvin E. Neymeyer, 1812 N. 7th St., Clinton, Iowa 52732

Filed May 18, 1981, Ser. No. 264,729

Int. Cl.³ C25B *9/00, 11/03, 15/08*

U.S. Cl. 204—270 **10 Claims**

3. A gas generation apparatus for operating upon an electrolyte, said apparatus comprising:

container means having inlet and outlet areas for receiving and discharging electrolyte respectively;

gas removal means fixed to said container means;

electrode means, disposed in said container means, forming at least one channel for electrolyte flow between said inlet and outlet areas, said channel beginning adjacent said inlet area and continuously narrowing, deepening and descending therefrom toward said outlet area; and

said electrode means including a plurality of electrodes, disposed side by side and extending from said inlet areas toward said outlet area, each having a pair of side surfaces diverging from each other, each side surface of one of said electrodes facing and converging toward a side surface of an adjacent electrode, said facing side surfaces forming said channel.

4,425,217

ANODE WITH LEAD BASE AND METHOD OF MAKING SAME

Henri B. Beer, Heide Kalmthout, Belgium, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 17, 1981, Ser. No. 293,384

Claims priority, application United Kingdom, Aug. 18, 1980, 8026832

Int. Cl.³ C25B *11/08, 11/10, 11/02*

U.S. Cl. 204—290 F **3 Claims**

1. An anode for oxygen evolution in an acid electrolyte, comprising an anode base of lead or lead alloy, characterized in that catalytic particles, which have a size lying between about 75 microns and about 850 microns and consist of valve metal to which at least one catalyst for oxygen evolution comprising a platinum group metal is fixed in a small amount lying between 0.3% and 6% by weight of said valve metal, are uniformly distributed on and partly embedded in the surface of the anode base of lead or lead alloy, whereby said catalytic particles are firmly anchored and electrically connected to said anode base, while their remaining, non-embedded part projects from said surface of the anode base, and thereby presents a larger projecting surface than the underlying surface of the anode base of lead or lead alloy, so that oxygen can be evolved on said projecting surface of the partly embedded catalytic particles at a reduced potential at which the underlying lead or lead alloy of said base remains electrochemically inactive and thereby essentially serves as a current-conducting support for said partly embedded catalytic particles of valve metal with a small amount of said catalyst.

4,425,218

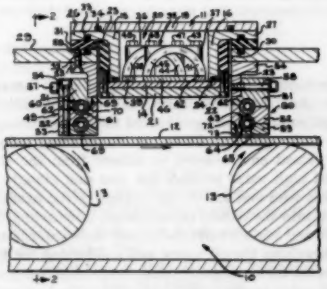
GAS DISTRIBUTION SYSTEM FOR SPUTTERING CATHODES

Merrill G. Robinson, Ann Arbor, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Mar. 30, 1982, Ser. No. 363,453

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **5 Claims**



1. A gas distribution system for use with a sputtering cathode mounted in a vacuum chamber and having a substantially planar target formed of the material to be sputtered onto substantially planar substrates located therebeneath, comprising distributor means at each side of said cathode for introducing two separate gases into the vacuum chamber between the target and the substrates, said distributor means comprising a support member, a pair of horizontal porous pipes located within said support member, and outlets in the support member through which the gases escape from the porous pipes into said vacuum chamber and by which the gases are directed in divergent directions, one toward the target and the other toward the substrates.

4,425,219
METHOD FOR THE PRODUCTION OF LIQUID CARBON COMPOUNDS FROM COAL

Erik Kroo; Laszlo Kovacs; Istvan Nemes, all of Budapest; Katalin Szabo nee Mogyorosi; Geza Szentgyörgyi, both of Tatabanya; Galina Moger nee Eremineva, Budapest; Andras Nemeth, Budapest; Dezsö Gal, Budapest; Szilard Riederauer, Budapest, and Janos Szepvölgyi, Tatabanya, all of Hungary, assignors to Tatabányai Szénbányák, Tatabanya, Hungary

Filed Jul. 31, 1981, Ser. No. 288,765
Int. Cl.³ C10G *1/04*; C10B *57/06*
U.S. Cl. 208—8 R **11 Claims**

1. A method for the production of liquid hydrocarbons from coal wherein 88 to 98% of said liquid hydrocarbons have a boiling point lower than 300° C. which comprises the steps of:

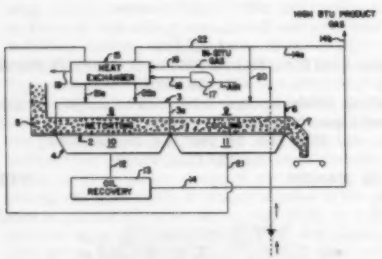
(a) oxidizing coal at a temperature of 80° to 300° C. in a solvent consisting of a C_1 to C_5, alcohol in vapor form to yield a product mixture containing said liquid hydrocarbons; and

(b) separating the liquid hydrocarbons from the product mixture.

4,425,220
METHOD OF AND APPARATUS FOR PROCESSING OF OIL SHALE

Daniel W. Kestner, Jr., Coraopolis, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1982, Ser. No. 346,522
Int. Cl.³ C10B *53/06*
U.S. Cl. 208—11 R **4 Claims**



1. In the indirect process of retorting oil shale through contacting the shale in a non-oxidizing environment with non-oxidizing high value product gas heated to retorting temperature in a heat exchanger and discharged at retorting temperature into said closed environment to release from the shale, oil vapors and high value product gas into said closed environment to mix with and add to the volume of the heated gas so introduced into the closed environment, conducting the mixture of gas and vapors from the closed environment and condensing therefrom the oil vapor and conducting the gas after removal of the oil into a duct system from which a portion only of the high value product gas is recycled to the heat exchanger to be heated and discharged into said closed environment at retorting temperature, the invention comprising:

(a) the withdrawal from said duct system of a portion of high value gas that is not required for recycle to the heat exchanger in the retorting of the shale and for use as high caloric value gas entirely outside the retorting and recycling system;

(b) circulating a second portion of the recycled high value gas from the duct system through the shale from which oil has been removed in a non-oxidizing atmosphere to recover heat from the shale and to preheat said second portion of the high value gas prior to passing it through said heat exchanger; and

(c) firing the heat exchanger with abundantly available low value, low cost gas produced entirely independently of the oil extraction system as a fuel for the heat exchanger, the gases from the burning of which in the heat exchanger are discharged from the heat exchanger as stack gases.

4,425,221
HYDROCARBON DESULFURIZATION PROCESS WITH A CATALYST OF CO-MO-P

William S. Millman, Brea, Calif., assignor to Union Oil Company of California, Brea, Calif.

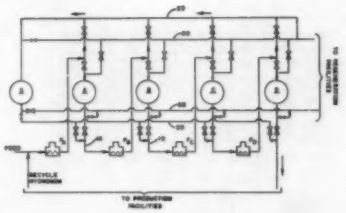
Division of Ser. No. 287,022, Jul. 27, 1981, Pat. No. 4,392,985. This application May 5, 1983, Ser. No. 491,882
Int. Cl.³ C10G *45/08*
U.S. Cl. 208—216 R **16 Claims**

1. A hydrodesulfurization process for hydrocarbons boiling primarily above 100° F. which comprises contacting said hydrocarbons with hydrogen under desulfurization conditions comprising a superatmospheric hydrogen partial pressure and a temperature of at least 400° F. in the presence of a catalytic composition which is prepared by the method comprising the steps of (1) impregnating support particles with an aqueous impregnating solution comprising dissolved cobalt, phosphorus, and at least 17 weight percent of Group VIB metal components, calculated as the trioxides, and wherein said dissolved phosphorus, calculated as P, is in a weight ratio to the Group VIB metal trioxide of about 0.05 to about 0.5, said solution having a pH less than about 1.0 and being characterized by a maximum extinction coefficient in the ultraviolet spectrum of about 0.7×10^4 to about 1.8×10^4 liters/cm.moles of Group VIB metal, and (2) activating the impregnated support particles.

4,425,222
CATALYTIC REFORMING PROCESS

George A. Swan, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 468,154, Feb. 22, 1983, abandoned, which is a continuation-in-part of Ser. No. 271,528, Jun. 8, 1981, abandoned. This application Apr. 6, 1983, Ser. No. 482,512
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—65 **19 Claims**



1. In a process for reforming, with hydrogen, in a cyclic reforming unit comprised of a plurality of serially connected onstream platinum-rhenium catalyst-containing reactors, inclusive of one or more lead reactors, a tail reactor, and a swing reactor which, due to an arrangement of process piping and valves comprising headers, can be substituted for any one of the onstream reactors while the latter is offstream for regeneration, and reactivation of the catalyst, the catalyst of the tail reactor ontaining a major concentration of rhenium relative to the concentration of the platinum, as contrasted with the concentrations of rhenium and platinum contained in the lead reactors, the weight ratio of rhenium:platinum on the catalyst in the tail reactor being maintained at least about 1.5:1, while the catalyst of the lead reactors contain a catalyst having a weight ratio of rhenium:platinum of up to about 1.2:1, the naphtha flowing in sequence from one reactor of the series to

another and contacting the catalyst at reforming conditions, in the presence of hydrogen,

the improvement comprising

providing in the entry side of the swing reactor, a catalyst having a weight ratio of rhenium:platinum of up to about 1.2:1, and

providing in the exit side of the swing reactor, a catalyst having a weight ratio of rhenium:platinum of at least about 1.5:1.

4,425,223

METHOD FOR MINIMIZING FOULING OF HEAT EXCHANGERS

Richard F. Miller, Humble, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

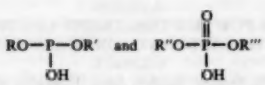
Filed Mar. 28, 1983, Ser. No. 479,411

Int. Cl.³ C10G *9/16*

U.S. Cl. 208—48 AA **7 Claims**

1. In a method of inhibiting fouling in petroleum processing equipment during processing of high sulfur feedstocks comprising injecting into a petroleum or petroleum derivative feed stream to said equipment an amount of antifoulant effective to substantially reduce the rate of fouling, the improvement comprising using as the antifoulant the composition comprised of:

(a) 10 to 90 weight percent of at least one phosphorus acid ester selected from



wherein R and R″ are hydrogen or an alkyl group having 1 to 20 carbons and R′ and R‴ are alkyl groups having 1 to 20 carbon atoms, and

(b) 90 to 10 percent of at least one hydrocarbon sulfonic acid having 1 to 50 carbon atoms.

4,425,224

PROCESS FOR CONVERTING PETROLEUM RESIDUALS

Lonnie W. Vernon, Baytown; Fritz E. Jacobs, and Richard F. Bauman, both of Houston, all of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 4, 1982, Ser. No. 336,665

Int. Cl.³ C10G *45/58, 47/34*

U.S. Cl. 208—56 **10 Claims**

1. A process for converting petroleum residuals having an initial boiling point within the range from about 850° F. to about 1050° F. comprising the steps of:

(a) combining a petroleum residual with a solvent comprising at least 0.8 weight percent donatable hydrogen and substantially all of the heavy solvent fraction separated in step (c) in a concentration sufficient to provide at least 0.4 weight percent donatable hydrogen based on petroleum residual in the initial mixture;

(b) converting the mixture from step (a) in the presence of molecular hydrogen at a hydrogen partial pressure within the range from about 1500 to about 2500 psig and at a temperature within the range from about 800° to about 880° F. for a nominal holding time within the range from about 30 to about 120 minutes thereby converting at least a portion of said petroleum residual to a normally gaseous product and at least a portion thereof to a normally liquid product;

(c) fractionating the normally liquid product into a desired liquid product fraction having a final boiling point within the range from about 600° F. to about 750° F. and a heavy solvent fraction having an initial boiling point equal to the final boiling point of the desired liquid product fraction and a final boiling point equal to the initial boiling point of said petroleum residual;

(d) recovering the desired liquid product fraction; and

(e) using the heavy solvent fraction in step (a).

4,425,225

REDUCING METAL CONTENT OF OIL FEEDS

Roby Bearden, and Gordon F. Stuntz, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 221,905, Dec. 31, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,784

Int. Cl.³ C10G *17/06, 29/10*

U.S. Cl. 208—252 **18 Claims**

1. A method for reducing the metal contaminant concentration in a petroleum fraction containing the metal contaminant and an asphaltene component which comprises:

A. contacting the petroleum fraction in a contacting zone with a metal rejection agent selected from the group consisting of sulfur dioxide in the vapor phase and precursors of vapor phase sulfur dioxide at a temperature above the critical temperature of sulfur dioxide and at a pressure ranging between about 20 and about 400 p.s.i.g. such that the concentration of sulfur dioxide in the contacting zone will range from about 0.5 to about 5.0 wt.% of the petroleum fraction;

B. passing the petroleum fraction from the contacting zone to a deasphalting zone where the petroleum fraction is contacted with a deasphalting agent to form a first fraction relatively lean in the asphaltene component and metal contaminant and a second fraction relatively rich in the asphaltene component and metal contaminant; and

C. separating the first fraction from the second fraction.

4,425,226

POLYMERIZATION CATALYST AND DEODORIZING AGENT

Robert E. Reusser; Joseph R. Kenton, and Elizabeth A. Todd, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 10, 1982, Ser. No. 448,558

Int. Cl.³ C10G *25/00*

U.S. Cl. 208—307 **21 Claims**

1. A process for the deodorization of a paraffinic hydrocarbon-containing feedstock comprising contacting said feedstock with a deodorizing agent; wherein said feedstock is comprised of

(a) paraffinic hydrocarbon, and

(b) an odor-causing impurity;

wherein said deodorizing agent is comprised of calcium silicate treated with at least one acid; and wherein said at least one acid is selected from sulfuric acid, phosphoric acid and nitric acid.

4,425,227

AMBIENT FROTH FLOTATION PROCESS FOR THE RECOVERY OF BITUMEN FROM TAR SAND

Scott L. Smith, Salt Lake City, Utah, assignor to GNC Energy Corporation, Dallas, Tex.

Filed Oct. 5, 1981, Ser. No. 308,491

Int. Cl.³ B03B *1/00*

U.S. Cl. 209—5 **6 Claims**

1. A froth flotation method suitable for recovery of bitumen from tar sands comprising:

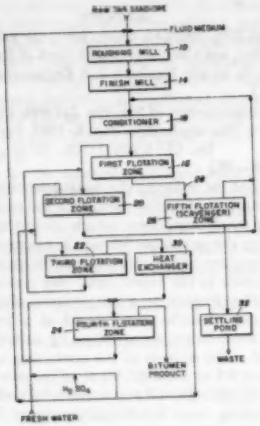
(a) admixing raw tar sand with a fluid medium effective to selectively wet and disperse the sand grains to produce a tar sand slurry;

(b) milling said tar sand slurry to liberate the bitumen from the tar sand grains; and

(c) admixing with the tar sand slurry from about 0.35% to about 1.8% by weight of a collector oil based on a unit of raw tar sand feed;

(d) separating the tar sand slurry by ambient froth flotation into a product slurry of bitumen enriched tar sand and a tailing of waste sand slurry substantially free of bitumen; and

(e) treating said waste sand slurry with an effective amount of hydrated lime and an organic flocculant to cause flocculation, thereby settling out the suspended sand; and recycling the fluid above the precipitated sand to step (a) or step (b).

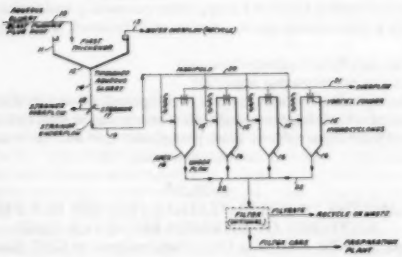


4,425,228

WET-CLASSIFYING METHOD FOR RECOVERY OF CARBON AND IRON-BEARING PARTICLES

John D. Lynn, Center Valley, and R. Donald Bartusiak, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 2, 1982, Ser. No. 354,312
Int. Cl.³ B03B 7/00; C22B 7/02
U.S. Cl. 209—17 9 Claims



1. A method for treating an aqueous slurry of blast furnace flue dust containing between about 1 and 36 weight percent particles having a size consist of submicron up to 6.35 mm, about 80 weight percent of the particles are carbon and iron containing particles and about 20 weight percent of the particles are zinc and lead bearing particles and a substantial portion of the carbon and iron bearing particles are separated from the zinc and lead particles and are collected as a usable product, the method comprising:

(a) straining the aqueous slurry of blast furnace flue dust to make a size separation at about 4 mm whereby all the relatively large foreign matter and the carbon and iron bearing particles larger than 4 mm are separated as a strainer overflow from substantially all the particles which are smaller than 4 mm and which are collected as a strainer underflow containing between 3 and 20 weight percent of the particles in the aqueous slurry of blast furnace flue dust,

(b) separating substantially all the carbon and iron bearing particles from the foreign matter in the strainer overflow,

(c) treating the strainer underflow of step (a) in at least one hydrocyclone operating at above atmospheric pressure wherein a substantial portion of the carbon and iron bearing particles which have a size larger than about 5 microns and not more than about 10 weight percent of the water in the strainer underflow are separated as a hydrocyclone underflow from substantially all the zinc and lead bearing particles having a size smaller than about 5 microns and not less than about 90 weight percent of the water in the strainer underflow as a hydrocyclone overflow,

(d) passing the hydrocyclone overflow of step (c) to storage, and

(e) passing the carbon and iron bearing particles in the hydrocyclone underflow to a filter to remove a portion of the water contained therein, as a filtrate and recovering the carbon and iron bearing particles as a filter cake,

(f) passing the filtrate to waste, and

(g) passing the filter cake to a preparation plant.

4,425,229

PROCESS FOR THE TREATMENT OF PHOSPHATE ORES WITH CARBONATE OR SILICO-CARBONATE GANGUE

Michel Baron; Gerard Baudet; Amar Henchiri, all of Orleans, and Pierre-Luc Hergibo, Sandillon, all of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

Filed Sep. 8, 1981, Ser. No. 300,205
Claims priority, application France, Sep. 8, 1980, 80 19366
Int. Cl.³ B03D 1/14
U.S. Cl. 209—167 26 Claims

1. A process for the treatment of reverse flotation of phosphate ores of the carbonate or silico-carbonate gangue type, characterized by the steps of:

(1) forming a feed suspension of the ore and conditioning the feed suspension with a depressor to depress the phosphate compounds contained in the ore,

(2) treating the conditioned feed suspension from step (1) with a collector essentially comprising a phosphoric ester, in a quantity sufficient to effect flotation of the carbonates, and

(3) separating by flotation the carbonates contained within the feed suspension and separating from the suspension a flotation residue containing the phosphate compounds.

4,425,230

SEPARATION OF MOLYBDENITE FROM ITS MIXTURE WITH OTHER SULFIDE ORES

Carlos Andress, Boulder, Colo., and William F. Riggs, Humble, Tex., assignors to Oreprep Chemicals, Inc., Houston, Tex.

Filed Feb. 16, 1982, Ser. No. 348,923
Int. Cl.³ B03D 1/14
U.S. Cl. 209—167 18 Claims

1. A process for recovering molybdenite from a flotation concentrate containing molybdenite and copper sulfide, comprising:

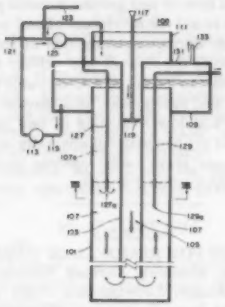
contacting the concentrate with an effective amount of dithiocarbonic acid, trithiocarbonic acid, water soluble salts of dithiocarbonic acid or trithiocarbonic acid, or mixtures thereof, to depress copper sulfide; and

subjecting the treated concentrate to froth flotation to differentially float and concentrate molybdenite.

4,425,231
WASTE WATER TREATING APPARATUS

Tadao Fujimoto, Kobe, and Tadaaki Kawasugi, Nara, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 27, 1981, Ser. No. 297,000
Claims priority, application Japan, Feb. 10, 1981, 56-17538
Int. Cl.³ C02F 3/30
U.S. Cl. 210—96.1 34 Claims

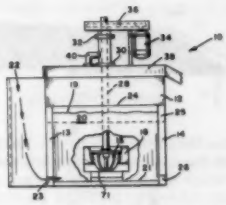


1. An apparatus for processing waste water containing an organic matter and nitrogen, comprising: a first long vertical downward chamber (105) open at the top buried under the ground for allowing for a flow of a mixed liquor to be processed in a circulation manner, downwardly through said long vertical downward chamber, a second long vertical upward chamber buried under the ground and arranged in association with said first long vertical downward chamber for allowing said mixed liquor fed through said first long vertical downward chamber to flow upwardly through said second long vertical upward chamber, forced circulating means operatively connected to said first and second chambers for positively circulating said mixed liquor from said second long vertical upward chamber to said first long vertical downward chamber, said forced circulating means including a lower communicating portion for communication between the lower portion of said first long vertical downward chamber and the lower portion of said second long vertical upward chamber and power driven pump means inserted between the upper portion of said second long vertical upward chamber and the upper portion of said first long vertical downward chamber, gas supplying means (117, 119) operatively connected only to said first open downward chamber (105) for supplying an oxygen containing gas into said first long vertical downward chamber, said gas supplying means (117, 119) forming an aerobic zone in said first open downward chamber (105) for nitrifying said mixed liquor being circulated by said forced circulating means mainly in said aerobic zone of said first long vertical downward chamber, whereby the supplied oxygen is dissolved into said mixed liquor with high efficiency as a function of a static water pressure in said first long vertical downward chamber, means (131 or 131, 135) closing at least a portion of said second upward chamber for forming an anaerobic zone in said closed portion of said second upward chamber, waste water supplying means (127) operatively connected to said closed portion of said second upward chamber for supplying a waste water into said closed portion of said long vertical upward chamber, said supplying means (127) having an open end (127a) reaching down to a given elevation in the vertical direction of said closed portion of said second long vertical upward chamber for denitrifying said nitrified mixed liquor in said anaerobic zone above said given elevation, withdrawing means operatively connected to said upward flow chamber means for withdrawing processed water, and gas discharging means (133) operatively connected to said closed portion of said second upward flow chamber for discharging externally a nitrogen gas produced by said denitrifying, whereby the mixed liquor, as viewed in the flow direction down in said first chamber and up in said second chamber, is first nitrified and then denitrified.

4,425,232
FLOTATION SEPARATION APPARATUS AND METHOD

George A. Lawrence, Weston; Michael J. Prevett, Easton, and Eugene L. Smith, Milford, all of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 22, 1982, Ser. No. 370,758
Int. Cl.³ C02F 1/24; B01F 3/04
U.S. Cl. 210—219 5 Claims



1. A rotor and stator assembly for use in a flotation cell comprising:

(a) a stator comprising an annular array of vertical stationary stator blade members having lower edge portions spaced from the cell bottom and having leading edge portions defining a central cavity,

(b) a rotor body positioned within said cavity and provided with a plurality of rotor blades each having a curvilinear periphery conforming to a parabolic or vortex segment configuration,

(c) said leading edge portions of said stator blades conforming in configuration and spaced radially from the periphery of said rotor blades at a substantially constant value along the corresponding length of said stator and rotor blades

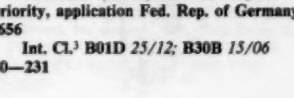
and

(d) said rotor blades extending downwardly in said central cavity a substantial distance beyond said lower edge of said stator blades.

4,425,233
FILTER PLATE FOR FILTER PRESSES

Max Oelbermann, Remscheid, Fed. Rep. of Germany, assignor to Rittershaus & Blecher GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,951
Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121656
Int. Cl.³ B01D 25/12; B30B 15/06
U.S. Cl. 210—231 9 Claims



1. Filter plate for filter presses, the filter plate including a continuous rim portion defining an outer periphery of the filter plate and encompassing a space defining a filter area, a chamber bottom portion connected to said continuous rim portion and disposed in the space defining the filter area, the chamber bottom portion including four quadrants with a central area including at least one outwardly curved portion, the curved portions of adjacent quadrants extending in opposite directions

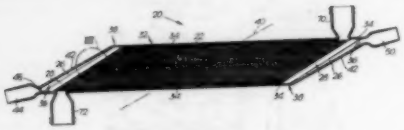
outwardly from a center plane of the filter plate such that the filter plate is rotationally symmetrical about a vertical axis of symmetry.

4,425,234

HOLLOW FIBER SEPARATORY DEVICE

Carl W. Reitz, Riehen, Switzerland, assignor to Hospal Ltd., Basel, Switzerland

Filed Jul. 30, 1979, Ser. No. 61,998
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 **39 Claims**



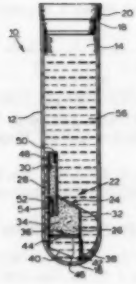
1. A hollow fibre separatory device comprising a plurality of hollow fibres having end openings defined at ends of the hollow fibres, which end openings are larger than the open cross-sectional area defined by the fibres inwardly of said ends in a plane normal to the axes of the fibres, the open ends of the hollow fibres being situated in a plane which is at an acute angle relative to the axes of end sections of the fibres, and in which a reservoir is provided which defines a fluid flow passage leading across the open ends of the fibres from a region adjacent the acute angle defined at the periphery of the plane defined by open fibre ends to the opposing peripheral region thereof.

4,425,235

BLOOD COLLECTION DEVICE WITH PHASE PARTITIONING MEANS

William D. Cornell, Ballwin, and Joel Joslin, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Mar. 22, 1982, Ser. No. 360,706
Int. Cl.³ B01D *17/00, 21/26*
U.S. Cl. 210—516 **17 Claims**



1. A blood collection device for receiving whole blood adapted to be centrifugally separated and partitioned into relatively low and high density phases comprising a container for receiving a blood sample having an open upper end and a closed lower end, a stopper closing said upper end, and a blood phase partitioning device in said container including a housing having an elongated passageway therein with a lower opening spaced from but adjacent said lower end of said container and an upper outlet opening spaced from said lower end of said container, flowable thixotropic gel-like material disposed in said housing including said passageway between said lower and upper openings thereof and having a specific gravity intermediate those of the relatively low and high density phases of blood and flowable from said upper outlet opening during centrifugation of the device to form a phase barrier between the separated phases, and time delay means for delaying the initiation of the flow of said gel-like material from said outlet opening including movable means disposed in said passageway and spaced from said lower opening and having a specific gravity greater than that of said gel-like material, said movable means being movable in said passageway toward said lower opening and being sized relative to the size of said passageway to allow restricted flow of said gel-like material past said movable means and to retard the movement of said movable means in said passageway during centrifugation of the device, and means for preventing the flow of said gel-like material from said housing during movement of said movable means to said lower opening of said passageway, said movable means being movable beyond said lower opening of said passageway to permit flow of said gel-like material upwardly in said passageway and out of said upper outlet opening to form a phase barrier between the separated phases.

4,425,236

NOVEL PROCESS FOR REMOVAL OF CADMIUM IONS

Otto Neunhoeffer, Homburg; Gerhard Wilhelm, Ladenburg; Lothar Hockenberger, Ludwigshafen; Franz J. Bergmann, Laudenbach, and Peter Endruscheit, Weinheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 323,041, Nov. 19, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 446,863
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044593
Int. Cl.³ B01D *11/04*; C01G *11/00*
U.S. Cl. 210—638 **10 Claims**

1. A process for the selective removal of cadmium ions from aqueous media comprising contacting the aqueous media with an effective amount of at least one water-insoluble organic polysulfide oligomer or polymer having the average structural formula

$$HS—(C_2H_4O—CH_2—O—C_2H_4—S—S)_n—C_2H_4O—CH_2—O—C—C_2H_4—SH$$

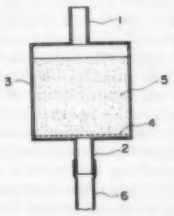
wherein n is an integer from 8 to 23 to selectively remove the cadmium ions and separating the polysulfide compound.

4,425,237

METHOD FOR SEPARATING T CELLS FROM LEUKOCYTES

Tsutomu Abe; Tsutae Akao, and Akihiko Ikeda, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 3, 1982, Ser. No. 354,402
Claims priority, application Japan, Mar. 10, 1981, 56-33070
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—692 **8 Claims**



1. A method for separating T cells from leukocytes which comprises contacting an animal serum protein solution having leukocytes suspended therein, said leukocytes comprising T

cells and non-T cells, with a hydrophobic, water-insoluble, granular porous organic polymer having an average pore diameter of 500 Å to below 5,000 Å and a total pore volume of 0.1 ml/g to below 4 ml/g, said total pore volume being measured by means of a mercury penetration porosimeter, to adsorb the non-T cells on said porous organic polymer while leaving substantially the T cells unadsorbed, and recovering the T cells left unadsorbed.

4,425,238

REMOVAL OF ANIONIC COMPOUNDS FROM WATER

Hans-Juergen Degen, Lorsch; Wolf Guender, Neustadt; Friedrich Linhart, Heidelberg; Werner Auhorn, Frankenthal; Guenter Frey, Dannstadt-Schauernheim; Werner Streit, Bobenheim, and Rolf Fikentscher, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Feb. 19, 1982, Ser. No. 350,142

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111615

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—666 **11 Claims**

1. A method which is capable of removing acid dyes from water which is recycled in manufacturing processes and from wastewater, comprising:

(a) adding to recycled water or waste water (1) an amount of a water soluble polymeric cationic assistant roughly corresponding to the amount of acid dyes in said recycled water or said wastewater, said cationic assistant being the reaction product of an alkylating agent containing an aromatic substituent with a cationic polyelectrolyte containing aminoalkyl groups selected from the group consisting of polyethyleneimines, polyvinylamines, the reaction products of ammonia or amines with 1,2-dichloroethane, epichlorohydrin, dichlorohydrin or chlorohydrin ethers of dihydric or polyhydric alcohols, polyamidoamines which are obtained by reacting a dicarboxylic acid of 4–10 carbon atoms with polyalkylenepolyamines possessing 3–10 basic nitrogen atoms in the molecule, polyamidoamines obtained by condensing acrylic or methacrylic ester with diamines or with polyalkylenepolyamines having 3–10 basic nitrogen atoms, polyamidoamines which contain from 20 to 400 parts by weight of grafted-on ethyleneimine per 100 parts by weight of a polyamidoamine, and condensates of urea with bis-aminoethylmethylamine and (2) at least one mineral adsorbent selected from the group consisting of aluminosilicate, chalk, titanium dioxide, bauxite, and calcium sulfoaluminate, the weight ratio of said adsorbent to polymeric cationic assistant ranging from 20:1 to 0.5:1;

(b) insolubilizing the acid dyes in said wastewater or recycled water as a result of said treatment; and

(c) separating the insolubilized material from said treated water.

4,425,239

METHOD AND APPARATUS FOR OIL-WATER SEPARATION

Claud L. Jacocks; Robbie J. LaFleur, both of Lake Charles, La., and Ralph L. Grimsley, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 24, 1981, Ser. No. 334,097

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—787 **11 Claims**

1. In a method for separating a fluid comprising an oil-water mixture into separate oil and water components, the steps comprising:

(a) passing said fluid into a separation zone and within said zone conforming said fluid in a horizontally extending continuous spiral flow path having a vertically elongated channel cross section,

(b) continuing to flow said fluid into said separation zone and along said spiral flow path wherby said fluid separates into oil and water components,

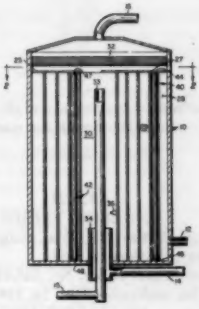
(c) withdrawing said oil and water components from said separation zone, and

(d) distributing the flow of fluid within said spiral flow path evenly throughout a substantial vertical interval of the channel cross section of said flow path.

4. In a system for separating an oil-water mixture into at least two components, having a combination comprising:

(a) a vertically oriented cylindrical separation vessel:

(b) inlet means adapted for the passage of fluid to said vessel and outlet means adapted for the separate withdrawal of fluid components from said vessel comprising a lower fluid outlet for the withdrawal of a relatively high density



component and an upper fluid outlet for the withdrawal of a relatively low density component; and

(c) baffle means within said vessel defining a horizontally extending spiral flow path for flow of both components of the oil-water mixture in fluid communication at one end with said inlet means and in fluid communication at the other end with said outlet means;

the improvement comprising:

(d) said spiral flow path having a continuous vertically elongated cross section extending from said inlet means to said outlet means; and

(e) distributor means for distributing the horizontal flow of fluid in said spiral flow path evenly over said vertically elongated cross section.

4,425,240

PLUNGING WATER JETS FOR OIL SPILL CONTAINMENT AND RECOVERY

Michael G. Johnson, 145 Branch Ave., Red Bank, N.J. 07701

Filed Mar. 18, 1980, Ser. No. 131,531

Int. Cl.³ E02B *15/04*; C02F *1/40*

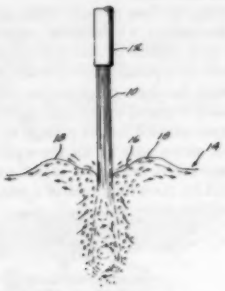
U.S. Cl. 210—801 **5 Claims**

1. A method of moving shallow layers of substances, especially oil, floating on a body of water comprising:

directing a compact coherent rod-like jet of water substantially vertically downward into the body of the water at a velocity and volumetric flow rate sufficient to penetrate therein and create a crater in the surface thereof and from a height above such surface sufficient to entrain air which rises from the lower portion of the jet penetration and effects an upwelling of water about the crater that creates surface currents moving outward from the jet; and

effecting relative horizontal movement between the jet and the body of water to create from the upwelling an upstream bow wave that diverges downstream of the jet and pushes shallow layers of substance floating on the body laterally away from the jet as respects the direction of the

relative movement, the floating substance sliding down the bow wave in front of the jet so that contact of the jet



with the substance is minimal and there is substantially no mixing of the substance with the water.

4,425,241

DRILLING FLUIDS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 235,485, Feb. 18, 1981, abandoned. This application Dec. 16, 1981, Ser. No. 331,031

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 C **22 Claims**

1. A water-based drilling mud composition comprising in combination

(a) sufficient aqueous solution of mineral salts having greater than 10,000 ppm dissolved solids content to maintain the mud as a fluid,

(b) sufficient clayey material to form a filter cake on the wall of a well,

(c) at least one water dispersible polymeric viscosifier selected from the group consisting of carboxyalkyl hydroxyalkyl cellulose ethers, carboxyalkyl cellulose ethers, hydroxyalkyl cellulose ethers, polyacrylamides, cellulose sulfate esters, guar gum, and heteropolysaccharides produced by fermentation of carbohydrates by bacteria of the genus Xanthomonas, and

(d) a polyethylene glycol component having a molecular weight ranging from about 6,000 to about 20,000 wherein the weight ratio of (c) to (d) ranges from about 3:1 to about 1:3, and the combined amount of (c) and (d) being sufficient to reduce water loss due to filtration through said filter cake.

4,425,242

METHODS OF INCREASING HYDROCARBON PRODUCTION FROM SUBTERRANEAN FORMATIONS

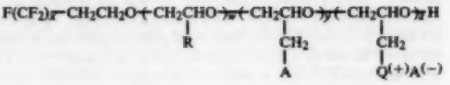
Glenn S. Penny, and James E. Briscoe, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 8, 1982, Ser. No. 355,660

Int. Cl.³ E21B *43/25, 43/16*

U.S. Cl. 252—8.55 R **22 Claims**

1. A method of increasing the production of hydrocarbons from a hydrocarbon-containing subterranean formation to reduce wetting of said surfaces by hydrocarbons and water, comprising contacting said formation with a cationic perfluoro compound whereby said compound is adsorbed onto surfaces of said formation said cationic perfluoro compound being selected from the group consisting of a compound or mixtures of compounds represented by the formula:



wherein:

x is an integer from 2–12 or an integer or fractional integer representing an average value of from 2–12;

w and y are both individually integers from 0–20 or integers or fractional integers representing average values of from 0–20,

z is an integer from 0–20 or an integer or fractional integer representing an average value of from 0–20, the sum of y and z being from 1–20;

R is a hydrogen, methyl, ethyl or propyl radical, or mixtures thereof;

A is a halogen chosen from chlorine, bromine or iodine; and

Q is a cationic nitrogen radical from the group consisting of an aromatic amino radical, a heterocyclic amino radical, and an amine radical represented by the formula:

wherein: R_1, R_2 and R_3 are from the group consisting of hydrocarbon radicals containing from 1–30 carbon atoms, aromatic hydrocarbon radicals such as phenyl and any alkyl substituted phenyl radical, and hydrogen radicals, provided that at least one of R_1, R_2 and R_3 is an aliphatic hydrocarbon radical containing from 1–30 carbon atoms or an aromatic hydrocarbon and that when any one of R_1, R_2 and R_3 radicals contains more than 4 aliphatic carbon atoms or an aromatic hydrocarbon, the other two radicals are each chosen from the group consisting of hydrogen, methyl, and ethyl radicals.

4,425,243

FOAMING AGENTS FOR USE IN DRILLING FOR OIL AND GAS

Harold A. Green, Havertown, Pa.; Morris Weinstein, Paramus, and Kenneth W. Prodo, Westfield, both of N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,720

Int. Cl.³ E21B *7/00;* **C09K** *3/00;* **B01J** *13/00;* **C11D** *1/12*

U.S. Cl. 252—8.5 C **3 Claims**

1. A foaming agent suitable for use in drilling for oil or gas comprising a branched decyl dimethylamine oxide the branched decyl group being derived from a mixture of branched primary alcohols having 10 carbon atoms, the major components of which are trimethyl heptanols.

4,425,244

ORGANOPHILIC CLAY GELLANTS

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 292,408, Aug. 13, 1981, and Ser. No. 292,409, Aug. 13, 1981. This application Jan. 25, 1982, Ser. No. 342,099

The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.

Int. Cl.³ C10M *5/20, 5/24*

U.S. Cl. 252—28 **21 Claims**

1. An organoclay slurry comprising from about 20% to about 50% by weight of an organophilic clay, from about 50% to about 80% by weight of an aqueous solution of a low molecular weight polar organic compound wherein the concentration of said compound is from about 2.5% to about 97.5% by

weight of said solution, and from 0% to about 40%, based on the weight of said organophilic clay, of an alkali metal base selected from the group consisting of sodium carbonate, potassium carbonate, ammonium carbonate, and mixtures thereof, wherein said solution contains:

(a) from about 20% to about 65% methanol when said compound is methanol;
(b) from about 10% to about 65% ethanol when said compound is ethanol;
(c) from about 2.5% to about 50% of an alcohol containing three carbon atoms when said compound is said alcohol;
(d) from about 2.5% to about 35% of an alcohol containing four carbon atoms when said compound is said alcohol; and
(e) from about 2.5% to about 20% of an alcohol containing five carbon atoms when said compound is said alcohol.

4,425,245

BENZENE SULFONIC ACID MODIFIED AROMATIC MANNICH PRODUCTS FROM ALKYL PHENOLS

Paul J. Cahill, Wheaton, Ill.; Edmund J. Piasek, deceased, late of Chicago, Ill., and by Evelyn W. Hunt, administratrix, Hoffman Estates, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 53,106, Jun. 28, 1979. This application Sep. 11, 1981, Ser. No. 301,299
Int. Cl.³ C10M *1/40*
U.S. Cl. 252—33 **3 Claims**

1. A process for producing an improved aromatic Mannich product having enhanced lubricating properties which comprises reacting an alkyl phenol wherein the alkyl group is derived from a polyolefin having a molecular weight of about 600–3200, a formaldehyde-yielding reagent, an aliphatic amine of the general formula $NH_2[(CH_2)_zNH]_xH$ wherein z is an integer from about 2 to about 6 and x is an integer from about 1 to about 10 and about 0.001 to 2.0 moles of an oil soluble benzene sulfonic acid per mole of amine wherein the oil soluble sulfonic acid is added to the reaction mixture at the same time as or after the polyamine.

2. A method for producing an improved aromatic Mannich product prepared from an alkyl phenol, formaldehyde or a formaldehyde-yielding reagent, and an amine, which method comprises adding a benzene sulfonic acid to the aromatic Mannich product, said benzene sulfonic acid being added in an amount within the range of about 0.001 to 2.0 moles of said benzene sulfonic acid per mole of amine.

3. A process for producing an improved aromatic Mannich product having enhanced lubricating properties, which process comprises reacting an alkyl phenol wherein the alkyl group is derived from a polyolefin having a molecular weight of about 600–3200, formaldehyde or a formaldehyde-yielding reagent, an aliphatic amine of the general formula $NH_2[CH_2)_zNH]_xH$ wherein z is an integer from about 2 to about 6 and x is an integer from about 1 to about 10 and about 0.001 to 2.0 moles of an oil-soluble benzene sulfonic acid per mole of amine, wherein the oil-soluble sulfonic acid is added to the alkyl phenol, the formaldehyde or formaldehyde-yielding reagent, and the amine.

4,425,246

OIL RECOVERY USING STABILIZED SALINE HEAT-TREATED HETEROPOLYSACCHARIDE SOLUTIONS

George M. Holzwarth, Linden; Lars A. Naslund, Morganville, both of N.J., and Erik I. Sandvik, Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 18, 1981, Ser. No. 303,413
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **12 Claims**

1. A process for recovering crude oil from a subterranean formation which comprises injecting an amount effective to provide mobility control of an aqueous solution containing heteropolysaccharides produced by the action of bacteria of the genus Xanthomonas, driving the displaced oil through the formation and recovering the displaced oil, wherein said heteropolysaccharide is stabilized against viscosity loss on heat treatment, if free of cell debris, has improved filterability and has been prepared by a process which comprises the steps of:

(a) preparing an aqueous solution which contains (i) from about 200 to about 30,000 parts per million by weight, of a heteropolysaccharide product produced by the bacterial fermentation of bacteria of the genus Xanthomonas, and (ii) at least about 0.5 weight percent of at least one inorganic salt to obtain a saline heteropolysaccharide solution;
(b) removing oxygen from said saline heteropolysaccharide solution;
(c) heating said saline heteropolysaccharide solution to a temperature of at least about 100° C. in an inert atmosphere;
(d) maintaining said saline heteropolysaccharide solution at a temperature of at least about 100° C. for a period of time sufficient to increase the injectivity and filterability characteristics of the heteropolysaccharide; and
(e) removing or separating the proteinaceous materials and/or residual whole bacterial cells or other cell debris from the saline and heat-treated heteropolysaccharide product to thereby obtain a modified heteropolysaccharide capable of imparting a viscosity of at least 4.0 centipoises to an aqueous test solution containing 2 weight percent NaCl and 0.2 weight percent $CaCl_2$ when said modified heteropolysaccharide is added to said solution at a concentration of approximately 600 parts per million, by weight, as measured on a Brookfield viscosimeter with a UL adapter at 60 rpm at 25° C. and said modified heteropolysaccharide is further capable of imparting a filterability such that more than 1000 ml of a different aqueous test solution containing 8.8 weight percent salt comprised of NaCl and $CaCl_2$ on a 10:1 weight ratio and approximately 600 parts per million concentration, by weight, of said modified heteropolysaccharide will pass without plugging through a Millipore ® filter having a diameter of 13 mm and a pore size of about 5 microns at a constant pressure drop of about 1.55 psig.

4,425,247

COMPOSITE SELF-LUBRICATING MATERIAL

Vladimir A. Bely, ulitsa Kulmana, 15, kv. 6, Minsk; Anatoly I. Sviridenok, ulitsa Pushkina, 20, kv. 30, Gomel; Valentin G. Savkin, ulitsa 50 let BSSR, 15, kv. 6, Gomel; Vladimir V. Meshkov, ulitsa B. Tsarikova, 63, kv. 36, Gomel, and Nikolai K. Myshkin, ulitsa Kozhara, 5, kv. 36, Gomel, all of U.S.S.R.

Filed Aug. 18, 1981, Ser. No. 293,773
Int. Cl.³ C10M *7/10*
U.S. Cl. 252—12 **12 Claims**

1. A composite self-lubricating material comprising a metal matrix incorporating functional additives, the matrix being formed by two components each selected from the group consisting of metals of Periods III–VI of the Periodic System and alloys thereof, the first component forming shells of regular cellular structure around the functional additives and the second component being located in the spaces between the shells.

4,425,248

WATER SOLUBLE LUBRICANT COMPOSITIONS

Alfred B. Piotrowski, Woodbury, and Robert H. Davis, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 18, 1981, Ser. No. 332,136
Int. Cl.³ C10M *3/30*
U.S. Cl. 252—49.3 **17 Claims**

1. A water soluble lubricant composition comprising from about 5% to about 50% by weight of an alkanolamine, from about 1% to about 30% by weight of a partial acid amide of a succinic acid, maleic acid, a methyltetrahydrophthalic acid or

a methylhexahydrophthalic acid and from about 0.5% to about 20% by weight of a polyalkylene glycol.

4,425,249

BENZENE SULFONIC ACID CATALYZED AROMATIC MANNICH PRODUCTS FROM ALKYL PHENOLS

Paul J. Cahill, Wheaton, Ill.; Edmund J. Piasek, deceased, late of Chicago, Ill., and by Evelyn W. Hunt, administrator, Hoffman Estates, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 28, 1979, Ser. No. 53,106
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 R 6 Claims

1. A process for producing an improved aromatic Mannich product having enhanced lubricating properties which comprises reacting an alkyl phenol wherein the alkyl group is derived from a polyolefin having a molecular weight about 600–3200, a formaldehyde-yielding reagent, an aliphatic amine of the general formula $NH_2[(CH_2)_zNH]_xH$ wherein z is an integer from about 2 to about 6 and x is an integer from about 1 to about 10 and about 0.001 to 2.0 moles of an oil-soluble benzene sulfonic acid per mole of amine.

6. A lubricant oil containing about 0.1 to 10 (wt)% based on the oil of the product of the process of claim 1.

4,425,250

PREPARATION OF FINELY DIVIDED FERRITE POWDERS

Hartmut Hibst, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,598
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3131681; Aug. 19, 1981, 3132678; Aug. 19, 1981, 3132683
Int. Cl.³ C04B 35/26
U.S. Cl. 252—62.59 4 Claims

1. A process for the preparation of a finely divided ferrite of the formula

$$MeFe_2O_4 \quad (I)$$

where Me = aMn + bNi + cZn + dCo + eFe(II), and the atomic weight ratios a, b, c, d and e are each from 0 to 1 and their sum is 1, or

$$M^1_2Me^1_2Fe_{12}O_{22} \quad (II)$$

where M^1 is barium, strontium, calcium and/or lead, and Me^1 is divalent manganese, copper, iron, cobalt, nickel, zinc, magnesium and/or equimolar amounts of lithium and trivalent iron, or

$$M^2(Me^2Ti)_xFe_{12-2x}O_{19} \quad (III)$$

where M^2 is barium or strontium, Me^2 is zinc, nickel and/or cobalt and x is from 0 to 2.0, wherein the Me, Me^1, Me^2, M^1 and/or M^2 salts required for the particular composition corresponding to the formula (I), (II) or (III), iron(III) chloride and sodium carbonate and/or potassium carbonate aare mixed as powders, with or without a powdered titanium compound to form a mixture of powders, the mixture obtained is heated at from 700° to 1200° C. and the resulting finely divided ferrite of the predetermined composition is isolated from the heated mixture by leaching with water.

4,425,251

WATER-ACTIVATED EXOTHERMIC CHEMICAL FORMULATIONS

A. B. Gancy, 265 Robineau Rd., Syracuse, N.Y. 13207

Filed Apr. 12, 1982, Ser. No. 367,727
Int. Cl.³ C09K 3/18
U.S. Cl. 252—70 21 Claims

10. The dry blend of calcium monoacid acetate with a chemical base which is unreactive towards the calcium monoacid acetate until the blend is activated by the introduction of water.

4,425,252

METHOD FOR RESPIRATORY COAL DUST ABATEMENT

Virgil H. Cargle, Houston, and Wilbur L. Bridges, Shepherd, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 19, 1981, Ser. No. 322,921
Int. Cl.³ C09K 3/22
U.S. Cl. 252—88 7 Claims

1. A formulation for the abatement of respiratory coal dust comprising water containing from 50 to 2,000 parts per million concentration of a coal dust wetting combination comprising: (a) 10 to 90 parts by weight of a water soluble salt of dodecyl benzene sulfonic acid; and, (b) 90 to 10 parts by weight of a nonionic surfactant which is a polyethoxylated C_8 to C_{10} alkyl phenol containing from 6 to 14 moles of ethylene oxide.

4,425,253

COGRANULATE OF ALKALI METAL SILICATE AND ALKALI METAL POLYPHOSPHATE, AND PROCESS FOR MAKING IT

Alexander Mauer; Horst-Dieter Wasel-Nielen, and Renate Adrian, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,983
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208138
Int. Cl.³ C11D 3/06
U.S. Cl. 252—135 7 Claims

1. Abrasion-resistant storable cogranulate consisting of particles with a size of about 0.2 to 2 mm and having an apparent density of 800 to 2200 g/liter, the cogranulate containing

(a) about 14.3 to 79.9 weight% of pentasodium tripolyphosphate

(b) about 10.9 to 79.9 weight% of an alkali metal silicate

(c) about 0.1 to 7.7 weight% of an ammonium polyphosphate of the following general formula (I)

$$H_{(n-m)+2}(NH_4)_mP_nO_{3m+1} \quad (I)$$

in which n stands for an integral average value 10 to 1000, m stands for a whole number of at most n+2 and m/n stands for a value of about 1, and

(d) about 0 to 99 weight% water bound to components (a) and (b), based on the possible mazimum quantity of hydration water of the components (a) and (b).

4,425,254

SLAG REMOVAL METHOD

Josef Langhoff, Kleinbergerhof 10, 4220 Dinslaken-Hiesfeld, and Jürgen Seipenbusch, Falterweg 17, 4300 Essen, both of Fed. Rep. of Germany

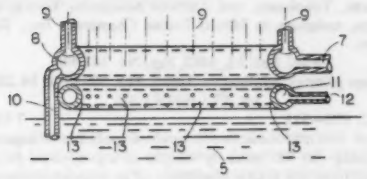
Filed Dec. 15, 1980, Ser. No. 216,826
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828562
Int. Cl.³ C10J 3/46
U.S. Cl. 252—373 14 Claims

1. A method of removing slag particles evolving from a coal-gasification process by reacting coal in a reaction chamber with a gasification medium at predetermined reactive pressure and temperature levels above a water bath confining the exhaust of the generated gas above the surface of said water bath, comprising the steps of:

allowing slag particles to fall by gravity into said water bath;

wetting said slag particles in their fall with an additive agent

comprising oil thereby causing said particles to be bonded when in contact with one another; and



collecting said bonded slag particles at the bottom of said water bath after they have sunk below the surface thereof.

4,425,255

REGENERATION METHOD OF CATALYSTS

Yoshiaki Toyoda, Takaishi; Yoshihiro Ikeda, Izumi, and Nobumasa Arashiba, Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP81/00238, § 371 Date May 13, 1982, § 102(e) Date May 13, 1982, PCT Pub. No. WO82/00961, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 18, 1981, Ser. No. 380,738

Claims priority, application Japan, Sep. 20, 1980, 55-130087

Int. Cl.³ B01J *20/02, 20/16*

U.S. Cl. 502—38 **12 Claims**

1. A method for regenerating an ammoxidation catalyst containing molybdenum as an active component comprising subjecting the catalyst, which has been deactivated through use as an ammoxidation reaction catalyst of an olefin, to a heat treatment in a reducing atmosphere and at a temperature of from 200° to 700° C. and then calcining same in a gaseous atmosphere containing molecular oxygen and at a temperature of from 550° to 700° C.

4,425,256

CONVERSION OF CELLULOSE INTO ACTIVATED CHARCOAL

Mark Pilipski, Clifton, N.J., assignor to Marcoal Chemical Industries, Clifton, N.J.

Continuation-in-part of Ser. No. 108,057, Dec. 28, 1979, Pat. No. 4,318,710, which is a continuation-in-part of Ser. No. 62,980, Aug. 2, 1979, Pat. No. 4,260,685. This application Mar. 8, 1982, Ser. No. 355,883

Int. Cl.³ B01J *20/20;* **C01B** *31/08;* **C10L** *9/02*

U.S. Cl. 502—418 **8 Claims**

1. A technique for converting raw stock rich in cellulose to an activated charcoal-like substance or charwood comprising the steps of:

A subjecting the stock to an anhydrous liquid hydrogen halide for a time period sufficient to convert the stock to charwood;

B purging the halide from the resultant charwood; and

C heating the purged charwood in a controlled atmosphere to prevent oxidation thereof at an elevated temperature for a period sufficient to produce a charwood having properties comparable to activated carbon suitable as an adsorption medium.

6. A technique as set forth in claim 1, wherein said halide is hydrogen chloride.

7. A technique as set forth in claim 1, wherein said halide is a mixture of hydrogen chloride and hydrogen fluoride.

4,425,257

SUPPORTED HIGH EFFICIENCY POLYOLEFIN CATALYST COMPONENT AND METHODS OF MAKING AND USING THE SAME

Nemesio D. Miro, Woodridge, N.J., and Malcolm J. Kaus, Humble, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 146,341, May 2, 1980, Pat. No. 4,347,158. This application Apr. 22, 1981, Ser. No. 252,661

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ C08F *4/02, 4/64*

U.S. Cl. 502—154 **20 Claims**

1. A method for producing a catalyst support suitable for use in alpha-olefin polymerization comprising:

providing a titanium-free, first particulate material suitable for use in alpha-olefin polymerization, the first particulate material being selected from the group comprising the Group IIA and IIIA salts and the salts of the multivalent metals of the first transition series with the exception of copper;

interspersing a second solid material with said first particulate material to form a titanium-free, particulate support admixture, said second solid material being different from but substantially isostructural with said first particulate material and being selected from the group comprising the Group IIIA salts; and then

applying an organic electron donor compound to said particulate support admixture and reacting at least a portion of said electron donor compound with said second solid material on at least the surface of said particulate support admixture to produce a titanium-free, solid, particulate catalyst support having a specific surface area less than the specific surface area of said particulate support admixture.

4,425,258

CATALYSTS FOR POLYMERIZATION OF OLEFINS

Hideyuki Tanaka; Kiyotaka Saito, both of Machida; Shozo Hori, Ayase, and Yutaka Mitsuda, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,835

Int. Cl.³ C08F *4/02, 4/64*

U.S. Cl. 502—154 **5 Claims**

1. A catalytic component for polymerization of olefins having a titanium content of 0.05–12% by weight which is prepared by intimately contacting an anhydrous magnesium halide as a substrate with at least one of a sulfur compound or sulfur and a sulfur compound wherein said sulfur compound is a member selected from the group consisting of sulfides, sulfur halides, sulfur oxyhalides, mercaptans and thioethers, and further contacting with an electron donor compound and a halogen-containing titanium compound in which halogen is directly attached to titanium.

4,425,259

ENDOTHERMIC REMOVAL OF COKE DEPOSITED ON CATALYTIC MATERIALS DURING CARBO-METALLIC OIL CONVERSION

William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, both of Ky., and James F. Hoffman, Huntington, W. Va., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 5, 1981, Ser. No. 290,277

Int. Cl.³ B01J *29/20, 23/72*

U.S. Cl. 502—74 **9 Claims**

1. A composition of matter for conversion of residual oil comprising silica or silica-alumina, kaolin clay, a crystalline aluminosilicate and a metal additive selected to catalyze the endothermic removal of deposited carbonaceous material in a catalyst regeneration zone comprising copper in combination with one or more of elements selected from the group consisting Li, Na, K, Sr, V, Ta, Mo, Re, Fe, Co, Ni, Ru, Rh, Pd, Os,

Ir, Pt, Ag, Au, Sn and Bi in an amount in the range of 0.2 to 5 wt%.

2. A composition of matter for use in a hydrocarbon conversion process comprising silica-alumina, kaolin clay, alumina and a metal additive selected to catalyze the endothermic removal of deposited carbonaceous material in a catalyst regeneration zone comprising copper in an amount in the range of 0.2 to 5 wt% wherein said regeneration zone contains carbon dioxide.

4,425,260

CATALYSTS FOR THE OXIDATION AND AMMOXIDATION OF ALCOHOLS

Jerry R. Ebner, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 30, 1982, Ser. No. 430,589
Int. Cl.³ B01J *23/88*
U.S. Cl. 502—255 **17 Claims**

1. A catalyst containing iron and molybdenum in a catalytically active oxidized state useful for the oxidation and ammoxidation of alcohols, which catalyst is represented by the empirical formula: $Fe_aMo_bO_c$ wherein a is 1, b is 1 to 5, and c is a number taken to satisfy the valence requirements of Fe and Mo in the oxidation states in which they exist in the catalyst, the catalyst being prepared by

(a) mixing an aqueous solution of ammonium molybdate with an aqueous solution of ferric nitrate in amounts sufficient to cause formation of an iron/molybdenum oxide precipitate;

(b) heating the aqueous iron/molybdenum oxide mixture at a temperature and for a time sufficient to convert the initially formed brown precipitate to a tan-to-yellow precipitate;

(c) forming the aqueous iron/molybdenum oxide mixture into dry particles;

(d) calcining the dry particles; and

(e) contacting the calcined particles sequentially with a molecular oxygen-free reducing gas and an oxygen-containing gas at a temperature from about 350° C. to about 550° C. and a pressure from about 100 kPa to about 600 kPa for at least about 5 minutes.

4,425,261

LIQUID SUSPENSION OF PARTICLES OF A METAL BELONGING TO THE PLATINUM GROUP AND A METHOD FOR THE MANUFACTURE OF SUCH A SUSPENSION

Per Stenius, Åkersberga; Jerzy Kizling, and Magali Boutonnet, both of Täby, all of Sweden, assignors to Ytkemiska Institutet, Stockholm, Sweden

PCT No. PCT/SE81/00091, § 371 Date Nov. 5, 1981, § 102(e) Date Nov. 5, 1981, PCT Pub. No. WO81/02688, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 20, 1981, Ser. No. 320,967
Claims priority, application Sweden, Mar. 24, 1980, 8002256
Int. Cl.³ B01J *13/00, 23/40*
U.S. Cl. 502—339 **10 Claims**

1. A liquid suspension of particles of a metal belonging to the platinum group, characterized in that the liquid comprises a microemulsion and that the size of the metal particles does not deviate from the average by more than about 10%.

4,425,262

ELECTROCONDUCTIVE RESIN COMPOSITION

Yoichi Kawai, Yokohama; Yoshiro Nakamura, Morioka; Yoshihisa Gotoh, Yokohama; Masami Maki, Kawasaki; Sachio Yokote, Yokohama, and Katsumi Sekiguchi, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,996
Claims priority, application Japan, Feb. 20, 1981, 56-23147
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 **7 Claims**

1. An electroconductive propylene polymer composition comprising: (a) 100 parts by weight of a propylene polymer selected from the group consisting of an ethylene/propylene copolymer, a combination of a propylene homopolymer with a ethylene/propylene rubber, and a combination of an ethylene/propylene copolymer with an ethylene/propylene rubber; (b) 10 to 60 parts by weight of carbon black; (c) 0.1 to 6 parts by weight of sulfur; and (d) 0.1 to 5 parts by weight of trithiolcyanuric acid.

4,425,263

FLEXIBLE SCREEN-PRINTABLE CONDUCTIVE COMPOSITION

Nicholas Nazarenko, West Chester, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 269,864, Jun. 3, 1981, abandoned. This application Nov. 2, 1981, Ser. No. 317,278
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 **9 Claims**

1. A screen-printable composition consisting essentially of (a) 30–80% by weight finely divided particles of conductive material selected from the group consisting of silver, nickel, copper, carbon, iron, gold, platinum, palladium and mixtures and alloys thereof dispersed in (b) 70–20% by weight organic medium which is a solution of linear aromatic polyester resin having an intrinsic viscosity of 0.5 to 1 completely dissolved in a volatile nonhydrocarbon solvent having a boiling point of 150°–220° C., the weight ratio of resin to solvent being from 0.15 to 0.5.

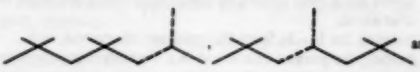
4,425,264

BRANCHED CHAIN KETONES USED IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES, COLOGNES AND PERFUMED ARTICLES AND THE LIKE PROCESS FOR PREPARING SAME

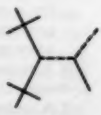
Richard M. Boden, Monmouth Beach, and Theodore J. Tyszkiewicz, Sayreville, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 296,868, Aug. 27, 1981, Pat. No. 4,374,276. This application Jun. 4, 1982, Ser. No. 384,962
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume composition or a cologne base an aroma augmenting or enhancing quantity of at least one substance prepared by the process of (a) trimerizing isobutylene to form triisobutylene, a mixture of substances defined according to the structures:

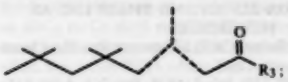


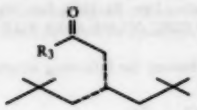
and



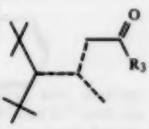
wherein in each of the molecules one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond and (b) reacting the resulting triisobutylene composition of matter with an alkanoic acid anhydride having the structure:

wherein R_1 and R_2 are the same or different and are each selected from the group consisting of methyl and ethyl, in the presence of a Lewis acid catalyst thereby producing a mixture of compounds comprising the compounds defined according to the structures:





and



wherein R_3 represents methyl or ethyl and in each of the molecules one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents a carbon-carbon single bond.

4,425,265

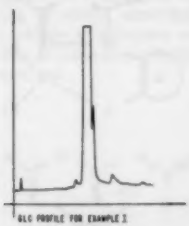
BRANCHED CHAIN ALKENYL METHYL CARBONATES, USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES AND FORMATE INTERMEDIATES USEFUL IN PREPARING SAME

Richard M. Boden, Monmouth Beach; Theodore J. Tyszkiewicz, Sayreville, and Michael Licciardello, Farmingdale, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 329,222, Dec. 10, 1981, Pat. No. 4,395,370. This application Sep. 23, 1982, Ser. No. 422,526

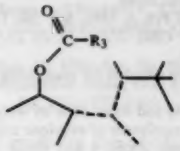
Int. Cl.³ A61K 7/46; C11B 9/00

U.S. Cl. 252—522 R **5 Claims**



GLC PROFILE FOR EXAMPLE I

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with a perfume composition base, a cologne base or a perfumed article base, an aroma augmenting or enhancing quantity of at least one ester defined according to the structure:



wherein R_3 is methoxy and one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds.

4,425,266

USE OF N-OXALKYLATED DERIVATIVES OF ANILINE AS A POLYMER-DISSOLVING COMPONENT IN FLOOR CLEANERS

Rudolf Beck, and Sigrid Scholz-Weigl, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

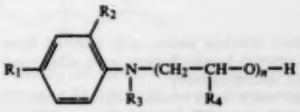
Filed Feb. 22, 1982, Ser. No. 350,931

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106491

Int. Cl.³ C11D 7/32, 7/50

U.S. Cl. 252—548 **13 Claims**

1. In a surface cleaner, useful for cleaning floors, comprising a component for dissolving polymers, the improvement wherein the surface cleaner has essentially no blue coloration and said component is an N-oxalkylated aniline of the formula



wherein

R_1 and R_2 are the same or different and each is hydrogen, NH_2 or C_{1-4}-alkyl,

R_3 is hydrogen or C_{1-4}-alkyl,

R_4 is hydrogen or methyl, and

n is a number from 1.0 to 5.0.

4,425,267

WOOD MODIFYING COMPOSITION COMPRISING AN AQUEOUS SOLUTION OF PHENOLIC ALCOHOLS, UREA AND SODIUM PENTACHLOROPHENATE

Lilia P. Skripchik, ulitsa Koltsova, 4, Korpus 3, kv. 59, and Gennady M. Shutov, ulitsa Lomonosova, 10, kv. 33, both of Minsk, U.S.S.R.

Filed Aug. 27, 1981, Ser. No. 296,627

Int. Cl.³ C09K 3/28

U.S. Cl. 252—607 **1 Claim**

1. A wood modifying composition comprising an aqueous solution of phenolic alcohols, urea, and sodium pentachlorophenate serving as a fire-retardant additive, the proportions of the components, in percent by weight, being as follows:

phenolic alcohols: 30 to 35

urea: 18 to 20

sodium pentachlorophenate: 2.8 to 4.0

water: the balance to 100.

4,425,268

POLYMER BLEND COMPOSITION FOR STRETCH WRAP FILM

Barry A. Cooper, Wayzata, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Feb. 6, 1980, Ser. No. 119,192
Int. Cl.[3] C08L *23/16, 23/20, 23/12, 31/04*
U.S. Cl. 524—110 24 Claims

1. A composition adapted for processing into a stretch wrap film comprising:

between about 40 and about 90% by weight of a high molecular weight copolymer of ethylene and vinyl acetate containing between about 4 and about 25% by weight of repeating units derived from vinyl acetate and having a melt index of between about 0.1 and about 4.0,

between about 8 and about 55% by weight of a linear copolymer of ethylene and a higher alkene, said linear copolymer having a specific gravity of between about 0.917 and about 0.945, and

between about 0.5 and about 6% by weight of a tackifier selected from the group consisting of a low molecular weight polyisobutene, polyterpenes, amorphous polypropylene, and microcrystalline wax.

4,425,269

METABOLICALLY PROTECTED ANALOGS OF NEUROTENSIN

Marcia E. Christy, Perkasie; Kenneth L. Shepard, West Point; Robert G. Strachan, Warrington, and Sandor L. Varga, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 7, 1982, Ser. No. 385,746
Int. Cl.[3] C07C *103/52*
U.S. Cl. 260—112.5 R 6 Claims

1. A blocked pentapeptide derivative compound of neurotensin having the formula:

α-A-B-Pro-Tyr-C-D-Y (I)

wherein:

A is another blocked amino acid selected from the group alkoxycarbonyl-4-aminobutyric acid; alkoxycarbonyl-β-alanine; and, alkoxycarbonyl;

B is a basic amino acid residue selected from the group 2,4-diaminobutyric acid, lysine, arginine, ornithine, and homoarginine;

C is a member of the group: isoleucine, norleucine, or valine;

D is a member of the group: leucine or norleucine; and,

Y is OH,OCH_3,$OCH_2C_6H_5$, NH_2,NH(lower alkyl),NH(aralkyl) or NH(dimethylaminoethyl).

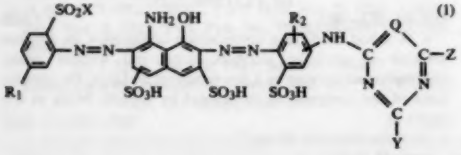
4,425,270

REACTIVE DISAZO COMPOUNDS

Yasushi Yamada, Ohmiya; Kenji Kunikata, Yono, and Hideo Otake, Ohmiya, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,431
Int. Cl.[3] C09B *62/09, 62/03*
U.S. Cl. 260—153 8 Claims

1. A reactive disazo compound which, in the free acid form, is represented by the formula:



(I)

wherein R_1 is H, Cl or SO_3H, R_2 is H, CH_3 or SO_3H, X is β-sulfatoethyl, β-thiosulfatoethyl, β-phosphatoethyl or vinyl, Y is Cl or F, Z is Cl, F or Z_1, Z_1 is amino; mono- or dialkylamino having 1 to 4 carbon atoms which may be substituted by hydroxy, carboxy or sulfo; morpholino; anilino which may be substituted by halogen, lower alkyl, lower alkoxy, carboxy or sulfo; N-methylanilino, naphthylamino or sulfo substituted naphthylamino; alkoxy having 1 to 4 carbon atoms which may be substituted by lower alkoxy; phenoxy; alkylthio having 1 to 4 carbon atoms which may be substituted by hydroxy; phenylthio, and Q is N, C—Cl or C—F when Z is Cl or F and N when Z is Z_1.

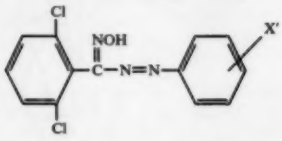
4,425,271

2,6-DICHLOROPHENYL-SUBSTITUTED PHENYL-NITROA-ZONES AND THEIR USE AS HERBICIDES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 54,323, Jul. 2, 1979, Pat. No. 4,270,947.
This application Dec. 22, 1980, Ser. No. 219,278
Int. Cl.[3] C07C *107/04;* A01N *9/12, 9/20*
U.S. Cl. 260—192 2 Claims

1. A compound having the following structural formula



wherein X' is alkyl having 1 to 4 carbon atoms; monohalo; dihalo, or nitro.

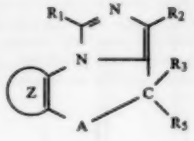
4,425,272

IMIDAZODIAZEPINES AND PROCESSES THEREFOR

Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

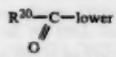
Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,959
Int. Cl.[3] C07D *513/14*
U.S. Cl. 260—245.6 3 Claims

1. A compound of the formula



wherein A is

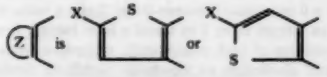
R_1 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl,



phenyl, C_1 to C_7 alkoxyl lower alkyl, halo lower alkyl, amino lower alkyl, mono or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino lower alkyl, pyridyl, benzyl and the group $R^{65}CO$ wherein R^{65} is hydrogen or lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, C_1 to C^7 acyloxy lower alkyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, cyano, cyano lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino lower alkyl, amino lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino, the group COOR where R is hydrogen or lower alkyl, the group RCO where R is hydrogen or lower alkyl, or the group R-C=N-R′ wherein R′ is hydrogen, lower alkyl, hydroxy, phenyl, alkoxy, amino, mono or di-alkylamino and arylamino and R is hydrogen or lower alkyl, the group

(where R^{85}, R^{86} are hydrogen, lower alkyl, aryl, hydroxy lower alkyl, lower alkenyl, or together R^{85} and R^{86} with the nitrogen atom may form a part of a 5- or 6-membered heterocyclic ring selected from the group consisting of morpholino piperazino, piperidino and pyrrolidino and the group $(CH_2)_nNR^{95}R^{96}$ where R^{95} and R^{96} are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkenyl, aryl or together R^{95} and R^{96} with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino) or the group

where R^{10}, R^{11}, R^{12} are hydrogen, lower alkyl or the group $(CH_2)_nNR^{13}R^{14}$ where n is 1 to 4 and R^{13}, R^{14} are hydrogen or lower alkyl with the limitation that where R^{10}, R^{11} or R^{12} is $(CH_2)_nNR^{13}R^{14}$ then the remaining substituents are hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen or lower alkyl; R_5 is hydrogen; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl R^{20} is C_1 to C_6 or hydrogen; and



wherein X is chlorine, bromine, iodine or hydrogen

wherein X is chlorine, bromine, iodine or hydrogen

and the pharmaceutically acceptable salts thereof.

4,425,273

PROCESS FOR PRODUCTION OF CHENODEOXYCHOLIC ACID

Takeshi Iida, 5-120, Aza Arai, Asaka-machi, Kouriyama-shi Fukushima-ken, Japan, and Frederic C. Chang, Mt. San Antonio Gardens, Apt. A-22, 900 E. Harrison Ave., Pomona, Calif. 91767

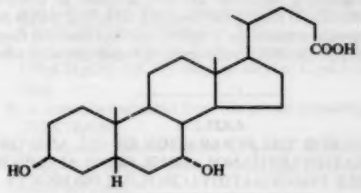
Filed Jun. 18, 1982, Ser. No. 389,624

Claims priority, application Japan, Dec. 2, 1981, 56-192823

Int. Cl.³ C07J 9/00

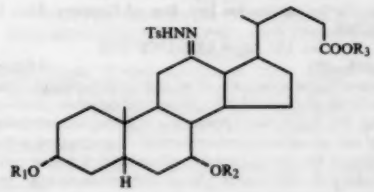
U.S. Cl. 262—397.1 **7 Claims**

1. A process for producing chenodeoxycholic acid of the following formula



(III)

which comprises reducing a 12-oxocholanic acid tosylhydrazone compound of the following formula



(I)

wherein R_1 and R_2 are identical or different and each represents an acyl group, Ts represents a tosyl group, and R_3 represents an alkyl group, with a metal hydrogen complex in an organic acid solvent, and subjecting the reduction product to a hydrolyzing treatment in an aqueous or alcoholic solution of an alkali.

4,425,274

PROCESS FOR THE PRODUCTION OF URSODESOXYCHOLIC ACID

Armand Guillemette, Noisy-le-Sec, and Abel Francois, Bondy, both of France, assignors to Roussel UCLAF, Paris, France

Continuation of Ser. No. 98,764, Nov. 30, 1979, abandoned. This application Jul. 14, 1982, Ser. No. 398,422

Claims priority, application France, Dec. 15, 1978, 78 35358

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.1 **6 Claims**

1. A process for the preparation of 3α,7β-dihydroxy-cholanic acid comprising reducing 3α-hydroxy-7-keto-cholanic acid with lithium in liquid ammonia in the presence of a proton donor to form lithium 3α,7β-dihydroxy-cholanate and reacting the latter with an acid to form 3α,7β-dihydroxy-cholanic acid.

4,425,275

PROCESS FOR SEPARATING 3-HYDROXY STEROIDS OR STEROLS FROM MIXTURES SUCH AS LIPIDS

Richard R. Crawford, Pittsford; William P. Blum, Rochester, and David C. Naramore, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 12, 1982, Ser. No. 397,313
Int. Cl.[3] C07J 9/00
U.S. Cl. 260—397.25 9 Claims

1. A method for separating sterols from sterol containing natural source which comprises (1) dissolving said sterol containing natural source in a mixture of a dialkyl ketone having about 5 or 6 carbons and a lower aliphatic alcohol, (2) adding to the mixture containing dissolved sterols a calcium bromide solution containing sufficient calcium bromide to complex with said sterols, (3) mixing the resulting dissolved sterols and calcium bromide solution for a period to effect reaction therebetween, and (4) thereafter recovering the resultant solid sterol complex.

4,425,276

PROCESS FOR THE SEPARATION OF OIL AND/OR PHOSPHATIDYLETHANOLAMINE FROM ALCOHOL SOLUBLE PHOSPHATIDYLCHOLINE PRODUCTS CONTAINING THE SAME

Bernd-Rainer Gunther, Bergheim-Fliesteden, Fed. Rep. of Germany, assignor to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,379
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047048
Int. Cl.[3] A23J 7/00; C07F 9/02
U.S. Cl. 260—403 5 Claims

1. Process for the separation of oil and/or phosphatidylethanolamine from alcohol soluble phosphatidylcholine products containing the same, thus producing a phosphatidylcholine free of oil and phosphatidylethanolamine characterized in that the solution of the alcohol soluble phosphatidylcholine product containing the oil and/or phosphatidylethanolamine, in a lower alkanol containing from 1 to 4 carbon atoms or in a mixture of several of such lower alkanols, said lower alkanol or mixture of alkanols being possibly admixed with up to 20% by volume of water, is put to the head of a chromatography column of silicic acid gel at a temperature ranging from 40° to 90° C., eluating the column at this temperature with a lower alkanol having from 1 to 4 carbon atoms or a mixture of several of such lower alkanols, said lower alkanol or mixture of alkanols being possibly containing up to 20% by volumn of water, recovering at first a prefraction containing the oil and/or phosphatidylethanolamine to be separated and, separate therefrom, the main fraction containing the pure phosphatidylcholine, and separating the solvent from the main fraction in usual manners.

4,425,277

METHOD FOR THE PREPARATION OF ALKENYL ESTERS OF CARBOXYLIC ACIDS

Fumiaki Kawamoto, Sakai; Shozo Tanaka, Osaka, and Yoshihiro Honma, Sakai, all of Japan, assignors to Shin-Etsu Vinyl Acetate Co., Ltd., Japan

Continuation-in-part of Ser. No. 928,710, Jul. 27, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 62,133
Claims priority, application Japan, Oct. 13, 1977, 52-122882; Dec. 26, 1977, 52-156928
Int. Cl.[3] C07C 67/10; C11C 3/10
U.S. Cl. 260—410.9 N 4 Claims

1. A method for the preparation of an alkenyl ester of a carboxylic acid represented by the general formula

$$R^1COOR^3$$

wherein R^1 is a hydrogen atom or a substituted or unsubstituted aliphatic or aromatic monovalent hydrocarbon group and R^3 is an alkenyl group, which comprises: subjecting a carboxylic acid represented by the general formula

$$R^1COOH$$

wherein R^1 is the same as defined above to transesterification reaction in the liquid phase with an ester compound represented by the general formula

$$R_2COOR^3$$

wherein R^2 is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group which is different from R^1 above and R^3 is the same as defined above; carrying out said transesterification reaction in the presence of a binary catalyst system comprising a main catalyst of a palladium compound in an amount from about 0.001 to about 0.5 parts by weight remaining as adsorbed on a solid catalyst carrier and a cocatalyst consisting of a combination of an alkali metal compound in an amount from about 1 to about 15 parts by weight and a copper (II) compound in amount from about 0.001 to about 1.0 part by weight, all per 100 parts by weight of the total amount of said carboxylic acid and said ester compound, the weight ratio of said copper (II) compound to said alkali metal compound being in the range from about 0.001 to about 0.5; from about 0.001 to about 0.5 parts by weight of said alkali metal compound being an alkali metal bromide, and from about 0.001 to about 0.5 parts by weight of said copper (II) compound being copper (II) bromide.

4,425,278

COMPLEX COMPOUNDS, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 938,172, Aug. 30, 1978, Pat. No. 4,336,148. This application Jun. 29, 1981, Ser. No. 278,763
Int. Cl.[3] C07F 11/00, 15/04
U.S. Cl. 260—429 R 8 Claims

1. A process for the preparation of a complex compound of a metal salt or metalloid salt and an ansolvo-acid or proton acid, of the formula I

$$M_n^m.X_m^n.pY.qZ \qquad (I)$$

in which M is a m-valent cation of a metal or metalloid, a metal-oxy or metal-dioxy cation or a hydrogen atom, X is a n-valent anion of a n-basic inorganic proton-acid or of a n-basic organic acid selected from the group of the aliphatic and cycloaliphatic carboxylic acids with up to 8 C atoms, which can be substituted by halogen and/or hydroxyl groups, the aromatic monocarboxylic, dicarboxylic and tricarboxylic acids, which may be substituted by hydroxyl, halogen and/or nitro groups, the organic oxyacids of phosphorus and sulphur, the organic thioacids of phosphorus, and the mercaptans, the inorganic or organic acid having a pK_a value of at most 15.8 or, if M is a proton, of at most 11, Y is water or a neutral organic molecule which can be bound coordinatively by the cation or the anion, Z is a complex-forming vicinal diol with at least 6 C atoms, p is 0 or a value between 0 and 2, q is a value from 1 to 32, m is an integer from 1 to 6 and n is an integer from 1 to 4 and of mixtures of such compounds, wherein a basic or non-basic metal alcoholate or non-basic metalloid alcoholate or proton-oxyacid ester with q mols of a vicinal diol of the formula Z, or a compound of the formula I, in which X is hydroxyl, is reacted in the stoichiometric amount with a compound of the formula L_nX^n, in which n and X are as defined hereinabove and L is H or an ammonium cation, with removal of water, ammonia or amine.

4,425,279

TRIDODECYLAMMONIUM MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,482

Int. Cl.³ C07F 11/00

U.S. Cl. 260—429 R **3 Claims**

1. Tridodecylammonium molybdates having the empirical formula

$$[(C_{12}H_{25})_3NH]_aMo_bO_c$$

where a, b and c are (2,6,19) or (4,8,26).

4,425,280

METAL AMINO ACIDS

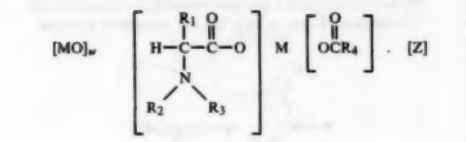
Benedict Y. K. Ho, Sagamore Hills, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Mar. 30, 1981, Ser. No. 249,161

Int. Cl.³ C07F 3/06

U.S. Cl. 260—429.9 **13 Claims**

1. A compound having the general formula:

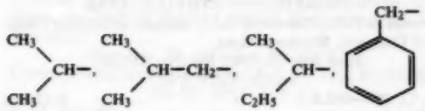


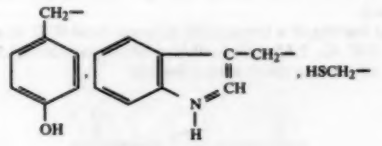
wherein

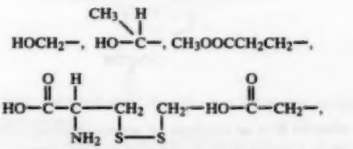
w has a value of 0–2;

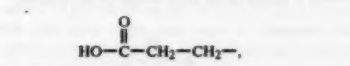
M is a member selected from the group of divalent metals consisting of zinc, magnesium, calcium, barium, strontium, manganese, cadmium, lead, tin II, tin IV$(R_5)_2$ where R_5 is a lower alkyl of C_1–C_8;

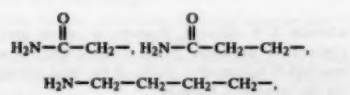
R_1 is a member selected from the group consisting of H—, C_1–C_{12} alkyl,

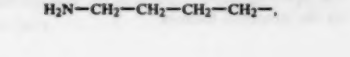












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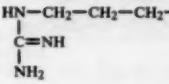
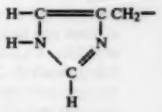




and $CH_3SCH_2CH_2$— with the proviso that R_1 cannot be $CH_3SCH_2CH_2$— when M is zinc;

R_2 is a member selected from the group consisting of H, CH_2CH_2OH, $C(CH_2OH)_3$, an alkyl of C_1–C_{15} and an aryl ring;

R_3 is a member selected from the group consisting of H and CH_2CH_2OH;

R_4 is a member selected from the group consisting of alkyls of C_1–C_{20}, straight chain or branched, an aryl and substituted aryl; and

Z is 0–1 molecules or partial molecules of a carboxylic acid corresponding to $HOOCR_4$.

4,425,281

COPPER OR SILVER COMPLEXES WITH FLUORINATED DIKETONES AND UNSATURATED LIGANDS

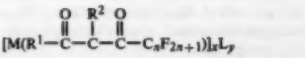
Gerald Doyle, Whitehouse Station, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1981, Ser. No. 282,652

Int. Cl.³ C07F 1/10, 1/08

U.S. Cl. 260—430 **15 Claims**

1. A composition of matter comprising a complex of the formula



where M is Cu(I); R^1 is C_1–C_6 fluoroalkyl, C_1–C_8 alkyl, C_4–C_6 heterocycle containing O, S or N or C_6–C_{10} aryl; R^2 is H or C_1–C_6 alkyl with the proviso that R^1 and R^2 together with the carbons to which they are attached may be joined together to form a C_6 ring; L is an unsaturated hydrocarbon ligand containing at least one non-aromatic unsaturation; x and y are 1 or 2; and n is from 1 to 8.

4,425,282

PREPARATION OF 3-(ARYLVINYL)-2,2-DIMETHYL-CYCLOPROPANE-1-CARBOXYLIC ACID ESTERS AND NEW INTERMEDIATE THEREFOR

Manfred Jautelat, Burscheid; Dieter Arlt, Cologne; Reinhard Lantzsch, Leverkusen; Rainer Fuchs, Wuppertal; Hans-Jochem Riebel, Wuppertal; Rolf Schröder, Wuppertal, and Horst Harnisch, Much, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,043

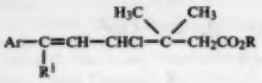
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916417

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.³ C07C 121/60, 51/58

U.S. Cl. 260—465 D **4 Claims**

1. A compound of the formula



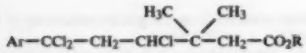
in which

Ar is a phenyl or naphthyl radical optionally substituted by at least one halogen, cyano, nitro, aryl, aralkyl, aryloxy, arylthio, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-2}-halogenoalkyl, C_{1-4}-halogenoalkoxy, C_{1-4}-alkylsulphonyl, halogen-substituted C_{1-4}-alkylsulphonyl or C_{1-2}-dialkylamino radical,

R is C_{1-4}-alkyl or a 3-phenoxybenzyl radical which is optionally substituted by halogen or cyano, and

R^1 is fluorine or chlorine.

2. A compound of the formula

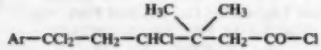


in which

Ar is a phenyl or naphthyl radical optionally substituted by at least one halogen, cyano, nitro, aryl, aralkyl, aryloxy, arylthio, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-2}-halogenoalkyl, C_{1-4}-halogenoalkoxy, C_{1-4}-alkylsulphonyl, halogen-substituted C_{1-4}-alkylsulphonyl or C_{1-2}-dialkylamino radical,

R is methyl or ethyl.

3. A compound of the formula



in which

Ar is a phenyl or naphthyl radical optionally substituted by at least one halogen, cyano, nitro, aryl, aralkyl, aryloxy, arylthio, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-2}-halogenoalkyl, C_{1-4}-halogenoalkoxy, C_{1-4}-alkylsulphonyl, halogen-substituted C_{1-4}-alkylsulphonyl or C_{1-2}-dialkylamino radical.

4,425,283

METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 17, 1982, Ser. No. 442,401

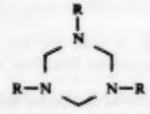
Int. Cl.³ C07F 9/38

U.S. Cl. 260—502.5 F **9 Claims**

1. A method of preparing N-phosphonomethylglycine comprising

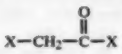
(a) reacting amine of the formula

wherein R is an aromatic or aliphatic group with formaldehyde to produce a s-triazine of the formula

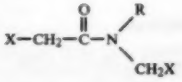


wherein R is as defined;

(b) reacting the triazine formed in step (a) with an acyl halide of the formula

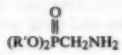


wherein X is chlorine, bromine, or iodine to form an amide compound having the formula

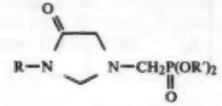


wherein R and X are as defined,

(c) reacting the amide formed in step (b) with O,O-di-substituted-aminomethylphosphonate having the formula



wherein R' is an aromatic or aliphatic group to form O,O-di-substituted-1-phosphonomethyl-3-(substituted)-1,3-imidazol-4-one, which has the structural formula



wherein R and R' are as defined; and

(d) hydrolyzing the imidazolone formed in step (c) to yield N-phosphonomethylglycine.

4,425,284

METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

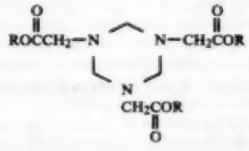
Filed Aug. 30, 1982, Ser. No. 412,624

Int. Cl.³ C07F 9/40

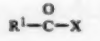
U.S. Cl. 260—502.5 F **9 Claims**

1. A method of preparing N-phosphonomethylglycine comprising

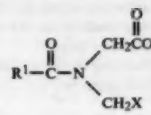
(a) reacting at a temperature between about 0° C. to about 150° C. 1,3,5-tricarboalkoxymethylhexahydro-1,3,5-triazine having the structural formula



wherein R is an aliphatic or aromatic group with at least about 3 moles of an acyl halide of the formula

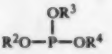


wherein X is chlorine, bromine or iodine and R^1 is an aliphatic or aromatic group to form the N-carboalkoxymethyl-N-halomethyl amide of the acyl chloride which has the structural formula

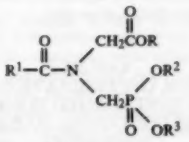


wherein X, R and R^1 are as defined above;

(b) reacting at a temperature between about 0° C. to about 150° C. about equal mole amounts of the amide formed in step (a) with a phosphite of the formula



wherein R^2 and R^3 are both aromatic groups or both aliphatic groups, and R^4 is an aliphatic group or R^4 is hydrogen, to form a phosphonate compound of the formula



wherein R, R^1, R^2 and R^3 are as defined; and

(c) hydrolyzing the phosphonate formed in step (b) to yield N-phosphonomethylglycine.

4,425,285

PACKING MATERIAL UNIT

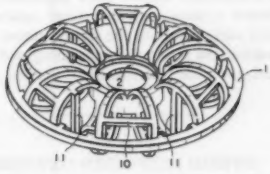
Yoichi Shimoi, Kamakura; Mikio Akune, Yokosuka; Tamotsu Akimoto, Urawa, and Ryuzo Watanabe, Washinomiya, all of Japan, assignors to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 428,376

Claims priority, application Japan, Feb. 26, 1982, 57-25808[U]

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—95 **2 Claims**



1. A packing material unit for use in a liquid-gas contact apparatus, comprising:

concentrically disposed outer and inner rings;

a plural number of paired filaments radially bridged between said outer and inner rings, said pairs of filaments being arched alternately on opposite sides of a plane involving said outer and inner rings;

a connecting member extending between intermediate portions of each pair of said filaments; and

a plural number of reinforcing members extending between apex portions of oppositely arched filaments of adjacent filament pairs.

4,425,286

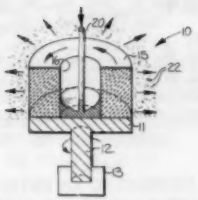
PROCESS AND APPARATUS FOR PRODUCING POWDERED METAL

Richard L. Kennedy, Monroe, N.C., assignor to Teledyne Industries, Inc., Monroe, N.C.

Filed Feb. 17, 1981, Ser. No. 234,732

Int. Cl.³ B01J *2/02*

U.S. Cl. 264—8 **2 Claims**



1. A continuous process for producing powdered metal of substantially uniform practice size and substantially free from inclusions, said process comprising continuously directing a stream of molten metal downwardly into a container having peripheral walls formed of a porous material having a multiplicity of interconnected voids defining a network of fine passageways extending through the peripheral wall, rotating the container at such a rate as to centrifugally force the molten metal through the network of fine passageways of the porous peripheral walls of the container and to filter out and retain in the porous walls inclusions present in the molten metal and to continuously eject the molten metal centrifugally outwardly from the container in the form of fine droplets, and cooling the droplets of molten metal ejected from the container to solidify the same into a metal powder.

4,425,287

PRODUCTION OF MOLDINGS FROM UNSATURATED POLYESTER RESINS

Anton Hesse, Luetzelsachsen; Dankmar Scholz, Frankenthal, and Walter Nicolaus, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 163,147, Jun. 26, 1980, abandoned. This application Feb. 3, 1983, Ser. No. 463,612

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931737

Int. Cl.³ H05B *1/00*; B29D *7/02*; C08F *8/00*

U.S. Cl. 264—22 **7 Claims**

1. A process for the production of moldings from unsaturated polyester resins; wherein a storage-stable, non-tacky semi-finished product is first produced, which can thereafter be shaped by any desired method, and finally be cured to give moldings which exhibit no delamination and no white fracture; which comprises the following steps:

(A) preparing a molding mixture of

1. an unsaturated polyester,
2. a copolymerizable vinyl compound,
3. from 0.005 to 0.5% by weight of an inhibitor,
4. from 0.01 to 1% by weight of a photoinitiator,
5. from 0.2 to 5% by weight of an oxide or hydroxide of lithium, magnesium or calcium, or of a metal alcoholate, which compounds act as thickeners,
6. from 1 to 50% by weight of an aluminum oxide hydrate pulverulent filler which transmits ultraviolet light and/or
7. from 5 to 60% by weight of a fibrous reinforcing material, with or without
8. other conventional additives, the percentage being based on the total mixture,

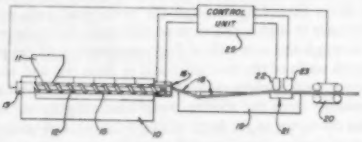
(B) thickening the mixture to give a non-tacky, storage stable semi-finished product,

(C) shaping the latter, and
(D) curing it by irradiation with ultraviolet light.

4,425,288
PROCESS FOR CLEANING METAL SURFACES
Dale O. Tieszen; Jerry O. Reed, both of Bartlesville, Okla., and Gerald E. Hagler, Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sep. 17, 1982, Ser. No. 419,283
Int. Cl.³ B28B 7/04
U.S. Cl. 264—39 10 Claims

1. A process for the removal of poly(arylene sulfide) deposits from the surfaces of fiber spinning equipment parts which comprises extruding at least one molten olefin polymer having from 2 to 6 carbon atoms through said parts.

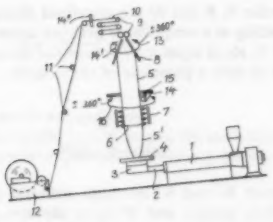
4,425,289
METHOD OF PRODUCING AN EXTRUDATE HAVING CONTROLLED SHAPE AND SIZE
Ly J. Lee, Columbus; James F. Stevenson, Hudson, and Richard M. Griffith, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Aug. 30, 1982, Ser. No. 412,634
Int. Cl.³ B29F 3/00
U.S. Cl. 264—40.1 19 Claims



1. A method of producing an extrudate from stock in an extrusion line having an extruder with an extrusion die comprising the steps of:
extruding the stock through the die at intitial relative speeds and at initial temperature conditions to produce an extrudate having an initial size and initial shape dimensions,
measuring size and shape dimensions of the extrudate,
varying the temperature conditions to adjust the initial shape and to maintain the shape at predetermined dimensions and
varying the relative speeds along the extrusion line to adjust the initial size and maintain the size at predetermined dimensions.

4,425,290
METHOD OF CONTROLLING THE FILM THICKNESS OF TUBULAR FILM PRODUCED IN A BLOWN FILM EXTRUDER INSTALLATION
Hartmut Upmeier, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Apr. 15, 1981, Ser. No. 254,262
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3014989
Int. Cl.³ B29D 23/04
U.S. Cl. 264—40.1 4 Claims

1. A method of controlling the film thickness of blown tubular film produced in a blown film extruder including an annular extrusion orifice divided into tempering segments into which a tempering medium can be introduced, and means for heating the periphery of said orifice at spaced circumferential positions therearound, said method comprising:
selecting a desired non-uniform film thickness profile;
adjusting the temperatures of the tempering medium to each of the several tempering segments in accordance with the desired film thickness profile by increasing the temperature of the tempering medium to the segments at which the film is to be relatively thin and decreasing the temperature of the tempering medium to the segments at which the film is to be relatively thick;
measuring the film thickness over the film circumference at a point where solidification has occurred;



and
adjusting the temperature of the tempering medium to each of the several tempering segments to correct and maintain the desired film thickness profile.

4,425,291
METHOD FOR THE PRODUCTION OF MORE WATER-RESISTANT FOAMED ELEMENTS FROM WATERGLASS CONTAINING NATURAL LATEX DISPERSION
Günter Beer, Duisburg; Wolfgang Pesch, Grevenbroich; Wolfgang Friedemann, Neuss, and Manfred Kupfer, Dünsen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien, Dusseldorf and Hansawerke Lurmann, Schutte & Co., Bremen, both of, Fed. Rep. of Germany
Filed Nov. 27, 1981, Ser. No. 325,222
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045404
Int. Cl.³ C04B 21/10, 35/16
U.S. Cl. 264—42 15 Claims

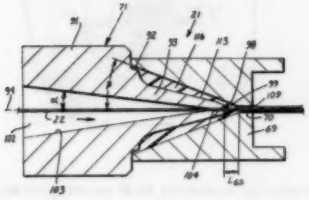
1. A method for the production of a more water-resistant foamed element from waterglass consisting essentially of the steps of mixing together a major amount of an alkali metal silicate solution, with inorganic fillers, at least one alkali-resistant wetting agent in an amount sufficient to form a stable foam, at least one compound capable of hardening a waterglass foam in an amount sufficient to cause said alkali metal silicate to harden, and sufficient natural latex dispersion to cause the foamed element to have a greater water resistance, mechanically foaming said mixture by the incorporation of an inert gas thereon, molding the resultant foam, curing said molded foam, and recovering a more water-resistant foamed and cured element.

4,425,292
HYBRID EXTRUSION METHODS
William M. Kanotz, Baldwin, Md., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Sep. 29, 1981, Ser. No. 306,820
Int. Cl.³ B29F 3/10
U.S. Cl. 264—174 3 Claims

1. A method of extruding a plastic material about a substrate, said method including the steps of:
advancing successive increments of length of a substrate through a core tube which is positioned in a cavity of a die and through a land of the die which has a circular cross-section to an exit orifice;
providing a flow passage having a converging first portion which is formed between the core tube and a wall of the die cavity and which has an annular cross-section that decreases in area toward an end of the core tube to cause

the minimum area of the first portion of the flow passage to be adjacent to the end of the core tube;

spacing the end of the core tube which has a circular cross-section a distance from an entrance of the land to form a second portion of the flow passage having a predetermined configuration, the distance being such that a ratio having a numerator comprising the difference between an outer diameter of the end of the core tube and an outer dimension of the substrate and having a denominator of the distance is at least 1 and such that ratio of it to an inner diameter of the die is in the range of about 0.5 to 1.3; and



flowing the plastic material through the flow passage with the converging first portion causing the maximum pressure in the plastic material to occur adjacent to the end of the core tube and cooperating with the predetermined configuration of the second portion to cause a controlled expansion of the plastic material without filling the second portion of the flow passage to thereby reduce substantially the pressure differential in the plastic material between the second portion and the exit orifice and to allow an inner diameter of the core tube to be substantially larger than the outer dimension of the substrate being advanced therethrough.

4,425,293

PREPARATION OF AMORPHOUS ULTRA-HIGH-SPEED-SPUN POLYETHYLENE TEREPHTHALATE YARN FOR TEXTURING

George Vassilatos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 18, 1982, Ser. No. 359,517
Int. Cl.[3] D01D *5/12*
U.S. Cl. 264—176 F 4 Claims

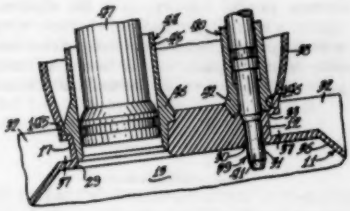
1. A process for preparing an oriented amorphous polyethylene terephthalate feed yarn for false-twist texturing comprising spinning polyethylene terephthalate at a windup speed of at least 5,000 m./min. and quenching in a room temperature water bath located at a distance from the spinneret such that the quenched filaments have an as-spun boil-off shrinkage of at least 45% and no detectable crystallinity as measured by X-ray diffraction.

4,425,294

METHOD FOR MOLDING AND FILLING A DISPENSING CONTAINER HAVING ONE OR MORE REMOVABLE CLOSURE MEANS UNITARY THEREWITH

Gerhard H. Weiler, South Barrington, and Henry Komendowski, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 117,455, Feb. 1, 1980, Pat. No. 4,298,045, which is a division of Ser. No. 896,978, Apr. 17, 1978, Pat. No. 4,239,726. This application Nov. 2, 1981, Ser. No. 317,296
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.[3] B29C *17/07*
U.S. Cl. 264—525 3 Claims



1. In a method for forming and filling a container made from a thermoplastic material in which a first mandrel is provided for blow molding a container, in which an assembly of mold parts is provided for defining a container-forming cavity, and in which the blow-molded container is filled with liquid while within the assembly of mold parts, the improvement comprising the steps of:

(a) providing said first mandrel with blowing means for blow molding the container and providing a second mandrel with a filling means, that is separate from said first mandrel for discharging liquid into the formed container to fill the container;

(b) engaging said thermoplastic material with said first mandrel to form a first aperture and at about the same time with said second mandrel to form a second aperture;

(c) blow molding the container with the blowing means of the first mandrel through said first aperture;

(d) filling the blow-molded container from said filling means of said second mandrel through said second aperture; and

(e) thereafter forming individual closures for said first and second apertures that are unitary with the container.

4,425,295

SYSTEM AND METHOD FOR GENERATING CURRENT BY SELECTIVE ELECTRON HEATING

Nathaniel J. Fisch, Princeton, and Allen H. Boozer, Rocky Hill, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

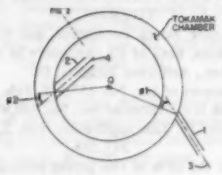
Filed Feb. 9, 1981, Ser. No. 233,296
Int. Cl.[3] G21B *1/00*
U.S. Cl. 376—123 16 Claims

1. A method for generating steady-state toroidal current in a toroidal plasma comprising the steps of:

preparing a toroidal plasma immersed in a toroidal magnetic field, and

injecting rf energy into said plasma such that the rf energy comprises a spectrum of waves traveling substantially in a

toroidal direction either substantially parallel or substantially anti-parallel to said toroidal magnetic field, said waves having substantially no parallel momentum, where said rf energy is phased such as to increase preferentially the cyclotron motion of electrons traveling in one of said toroidal direction said electrons satisfying the resonance



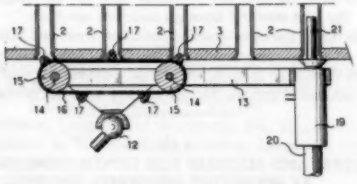
condition $\omega - k_{\parallel} v_{\parallel} = n\phi_e$, where ω is the wave frequency, $k_{\parallel}$ is the wave parallel wavenumber, $v_{\parallel}$ is the electron parallel velocity, ω_e is the electron gyrofrequency, n is an integer, and said electrons being selected from the group consisting essentially of electrons substantially on the magnetic axis or having an energy in the range of 10 to 50 times the thermal electron energy.

4,425,296

PROBE-HOLDING APPARATUS FOR HOLDING A PROBE FOR CHECKING STEAM GENERATOR TUBES PARTICULARLY IN A NUCLEAR REACTOR INSTALLATION

Andre Adamowski, Paris; Gerard Gallet, Juvisy sur Orge; Jacques Lhermitte, Vertheuil; Maxime Monne, Paris, and Guy Vautherot, Gagny, all of France, assignors to Intercontrole, Rungis, France

Filed Oct. 31, 1980, Ser. No. 202,748
Claims priority, application France, Nov. 30, 1979, 79 30022
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—245 **5 Claims**



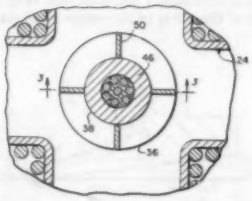
1. A probe-holding apparatus for a probe for checking steam generator tubes, said apparatus comprising a telescopic arm resiliently urged towards its position of maximum extension and said arm having first and second opposed ends, a support, first ball-joint means movably mounting the first end of the arm on the support, a carriage, and second ball-joint means mounting said carriage on said second end of said arm, said carriage comprising an endless belt formed with projections spaced apart in accordance with spacing of said tubes, guide means for a probe, and a stepping motor for driving said belt, the guide means for the probe and the projections being disposed in the same direction.

4,425,297

GAMMA RAY THERMOMETER FOR BOILING WATER REACTOR

Erik Rolstad, Halden, Norway, and Robert D. Smith, Bethesda, Md., assignors to Scandpower, Inc., Bethesda, Md.

Filed Jun. 23, 1981, Ser. No. 276,526
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—247 **4 Claims**



1. A device for measuring local power generation within a fuel assembly of a nuclear reactor comprising:

a gamma radiation absorbing body elongated along a longitudinal axis and made of heat conductive and electrically conductive material;

elongated thermocouple means mounted within said body for establishing axially spaced differential temperature sensing junctions therein at each of a plurality of local measuring zones;

coolant in external contact with said body throughout for establishing a uniform heat sink temperature extenally of said elongated body for producing radial heat flow paths from said junctions of said thermocouple means;

reduced diameter portions of said elongated body at each of said local measuring zones for establishing thermal and electrical deviations in resistance of the elongated body producing a differential temperature signal across said junctions of said thermocouple means; and strengthening fins made of high thermally conductive material extending radially from said reduced diameter portion of said elongated body.

4,425,298

BAFFLE MAINTENANCE APPARATUS

Edward P. Shields, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1981, Ser. No. 252,116
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—249 **8 Claims**

1. Baffle maintenance apparatus for inspecting baffle plates in a nuclear reactor comprising:

a support member capable of being positioned in a nuclear reactor;

a carriage slidably disposed on said support member;

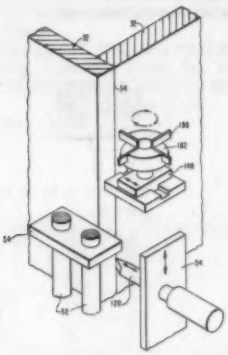
a platform disposed on said carriage;

a rod slidably disposed in said platform;

a rotatable member rotatably disposed on said rod and having a plurality of feeler gauges attached thereto for selectively inserting said feeler gauges between said baffle plates for determining the width of the space between said baffle plates;

actuator means connected to said rod for moving said rod and said rotatable member relative to said platform; and

indexing means mounted on said platform and arranged to contact said rotatable member when said rotatable member is moved relative to said platform for contacting and rotating said rotatable member relative to said platform.

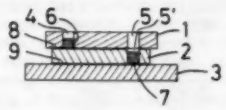


4,425,299

METHOD FOR BONDING SINTERED METAL PIECES

Takashi Koiso, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 15, 1981, Ser. No. 302,355
Claims priority, application Japan, Sep. 24, 1980, 55-133223; Nov. 25, 1980, 55-166453
Int. Cl.³ B22F 7/02
U.S. Cl. 419—6 **4 Claims**



1. A method for producing a sintered structure of a complicated structure having more than two pieces of iron group sintered metals bonded at the flat faces thereof which comprises:

forming through holes at predetermined locations of the metal pieces, except for the metal piece constituting the lowermost layer;

providing a concave groove on at least one metal face of each of the metal faces to be bonded to each other;

superposing the metal pieces with said through holes so that the through holes of the metal pieces coincide with each other, said metal piece constituting the uppermost layer having more through holes than the metal piece underneath, and the succeeding metal pieces being arranged such that when a brazing alloy is placed into the topmost through holes, and melted, it can infiltrate into the interfaces between each of the metal layers;

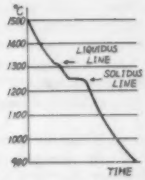
placing a brazing alloy into each of the topmost through holes and heating the entire assembly so that the brazing alloy infiltrates into each of the metal layers to form the bonded structure.

4,425,300

HARD FACING NICKEL-BASE ALLOY

Takao Teramoto, and Kensuke Hidaka, both of Kyoto, Japan, assignors to Fukuda Metal Foil & Powder Co., Ltd., Kyoto, Japan

Filed Apr. 30, 1981, Ser. No. 259,178
Claims priority, application Japan, May 2, 1980, 55-60229
Int. Cl.³ C22C 19/05
U.S. Cl. 420—453 **4 Claims**



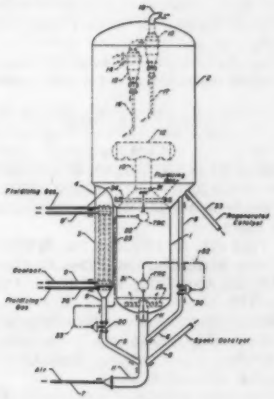
1. A hard facing nickel-base alloy consisting essentially of 10 to 25% by weight of chromium, 3 to 15% by weight of molybdenum, 3 to 7% by weight of silicon, 1 to 1.2% by weight of carbon and 1 to 30% by weight of iron, the balance being substantially nickel.

4,425,301

FLUID CATALYST REGENERATION APPARATUS

Anthony G. Vickers, Arlington Heights; Harold U. Hammershaimb, Western Springs, and Charles L. Hemler, Jr., Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 289,571, Aug. 3, 1981, Pat. No. 4,374,750.
This application Nov. 3, 1982, Ser. No. 439,090
Int. Cl.³ C10G 11/18; B01J 21/20, 29/38, 8/26
U.S. Cl. 422—111 **6 Claims**



1. An apparatus for regeneration of a coke-contaminated, fluid catalyst, which apparatus comprises:

(a) a vertically oriented combustion chamber having an upper and lower section;

(b) an inlet line for regeneration gas connecting with the lower section of said combustion chamber;

(c) an inlet line for coke-contaminated, spent fluid catalyst connecting with the lower section of said combustion chamber;

(d) a disengagement chamber located superadjacent to and above said combustion chamber and in direct communication therewith;

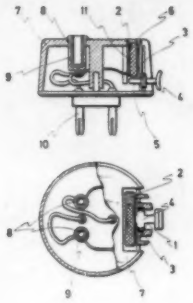
(e) a catalyst collection portion at the bottom of said disengagement chamber;
(f) a heat exchanger, located remote from said combustion chamber and said disengagement chamber, having a catalyst inlet and catalyst outlet;
(g) heat removal means disposed within said heat exchanger;
(h) a first catalyst recycle conduit connecting said bottom catalyst collection portion of said disengagement chamber with said heat exchanger inlet, such that hot regenerated catalyst passes from said catalyst collection portion of said disengagement chamber to said heat exchanger;
(i) a heat exchanger catalyst discharge conduit having a flow control valve therein, said conduit connecting said catalyst outlet of said heat exchanger with said combustion chamber, such that cooled catalyst from said heat exchanger passes from said heat exchanger to said combustion chamber;
(j) a second catalyst recycle conduit connecting said catalyst collection portion of said disengagement chamber with said combustion chamber, such that hot regenerated catalyst passes directly from said disengagement chamber to said combustion chamber; and
(k) a control system to monitor and maintain the temperature within said combustion chamber which comprises:
(i) first means to sense the temperature in the combustion chamber at a location within said upper section of said combustion chamber, such that said sensing is performed in a relatively dilute-phase of catalyst rising from a relatively dense-phase of catalyst maintained in said lower section of said combustion chamber;
(ii) first means to control temperature having an adjustable set point and connecting directly with said first means to sense temperature and developing a first output signal; and
(iii) first means for transmitting said first output signal to said control valve in said catalyst discharge conduit of step (i), such that said control valve in said discharge conduit is adjusted responsive to said temperature sensed within said upper section of said combustion chamber to regulate the flow of catalyst from said heat exchanger to said combustion chamber to increase or decrease the flow of cooled catalyst so as to maintain the desired temperature within said combustion chamber.

4,425,302
HOUSEHOLD ELECTRIC DEVICE, A SUBLIMER OF PERFUMED BARS AND/OR INSECTICIDES

Bartolome Pons Pons, Madrid, Spain, assignor to Seimex, S.A., Barcelona, Spain

Filed Feb. 10, 1982, Ser. No. 347,504
Claims priority, application Spain, Dec. 17, 1981, 262.127[U]
Int. Cl.³ A61L *9/03;* **A01M** *1/20, 13/00*
U.S. Cl. 422—125 **1 Claim**

1. A household electrical device for sublimating a bar of a perfume or insecticide material, said device comprising:
a casing defining a compartment dimensioned to receive therein a bar to be sublimated;
an electric resistance positioned within said casing at a location adjacent said compartment;
an electric plug attached to said casing and electrically connected to said resistance, such that when said plug is inserted into an electrical socket said resistance is heated, thereby sublimating the bar;
said casing having openings including a central opening from said compartment for the discharge therefrom of vapors from the bar;
said central opening having lateral sides having therein blind slots;
a manually operable slide member slidably mounted in said slots;
said slide member having a blade means extending into said compartment for, upon manual sliding of said slide member along said slots, slidably removing the bar from said compartment;
said casing having an outer wall spaced from said plug, said outer wall having therein holes; and

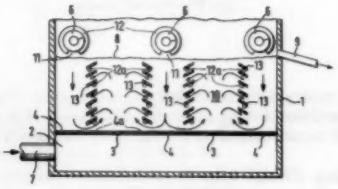


metal bushings covered with insulating sleeves positioned in said holes, said metal bushings being electrically connected to said plug and to said resistance, said metal bushings being dimensioned to receive another electric plug, such as that of another electrical apparatus.

4,425,303
FLUIDIZED BED REACTOR FOR PARTICULATE MATERIAL

Hans-Dieter Schilling, Hattingen, and Ulrich Grabenhorst, Gangelt, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 275,515, Jun. 15, 1981, abandoned. This application Apr. 26, 1983, Ser. No. 488,773
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022441; Jan. 22, 1981, 3101942
Int. Cl.³ B01J *8/30, 8/44;* **F26B** *3/08;* **F27B** *15/08*
U.S. Cl. 422—142 **23 Claims**



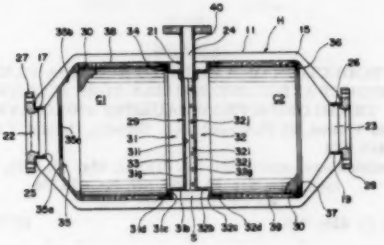
1. In a fluidized bed reactor for treating particulate material, of the type which has means forming a working space, a bottom arranged for passage of a fluidizing gas therethrough and upwardly into said working space and having zones which are formed so that the passage of the fluidizing gas is at least reduced through said zones and the latter have edges, means for supplying the particulate material into said working space above at least one of said zones with reduced passage of the particulate material, and a plurality of inserts arranged in the working space, the improvement comprising:
the inserts being formed so that they are jalousie-shaped, arranged above said edges of said zones of said bottom, and having surfaces which are inclined towards said one zone of said bottom.

4,425,304

CATALYTIC CONVERTER

Masayuki Kawata, Higashi Hiroshima, and Yoshii Shinichi, Hiroshima, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 12, 1982, Ser. No. 338,953
Claims priority, application Japan, Jan. 20, 1981, 56-7638; Feb. 19, 1981, 56-22801[U]; Feb. 21, 1981, 56-23914[U]
Int. Cl.³ B01D 53/36
U.S. Cl. 422—171 8 Claims



1. A catalytic converter for effecting substantial purification of exhaust gases by catalytic reaction, which comprises, in combination:

a generally elongated housing having at one end an inlet for receiving the exhaust gases and at the other end an outlet for discharging the exhaust gases which have been passed through said housing;

at least first and second monolithic catalyst carriers housed within said housing in longitudinally spaced relation to each other and located on respective sides adjacent said inlet and said outlet, each of said catalyst carriers having a plurality of parallel closely adjacent flow passages extending throughout the length thereof;

a spacer assembly positioned inside said housing and within an intermediate space between said first and second catalyst carriers for holding said first and second catalyst carriers in said longitudinally spaced relation and having an axial passage and a transverse passage defined therein, said axial passage extending in said intermediate space across said spacer assembly in a direction parallel to the direction of flow of the exhaust gases, said transverse passage extending in a direction generally perpendicular to the direction of flow of the exhaust gases, said spacer assembly comprising first and second spacer components, each of said first and second spacer components generally comprising an annular wall having an opening defined therein, a transverse wall having perforations defined therein and extending across said opening with opposite ends thereof integral with said annular wall, and a support wall protruding from said annular wall and terminating in rigid securement to said housing, said transverse wall of at least one of said first and second spacer components having a recess defined therein, said first and second spacer components being connected together with the annular wall thereof held in abutting face-to-face relation to each other and with the support walls of said first and second spacer components protruding from the annular walls thereof in opposite directions away from each other, and wherein said axial passage is defined by portions of the openings in said annular walls on respective sides of the transverse walls of said first and second spacer components and said transverse passage is defined by said recess in said transverse wall of said at least one of said first and second spacer components; and

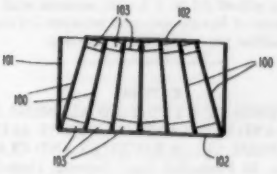
an air supply piping having one end adapted to be fluid-connected to a source of air and the other end fluid-connected to said intermediate space through said transverse passage.

4,425,305

CATALYTIC CREOSOTE BURNER FOR A WOOD STOVE

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19380

Continuation-in-part of Ser. No. 269,367, Jun. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 232,973, Feb. 9, 1981, abandoned. This application Aug. 4, 1982, Ser. No. 405,294
Int. Cl.³ B01D 53/36; B01J 15/00; F23B 5/00; F23J 15/00
U.S. Cl. 422—180 4 Claims



1. In a combination, a wood stove and a catalytic creosote burner, the stove having a combustion area and an outlet path for flue gas flowing from the combustion area, the catalytic burner comprising a nest of spaced-apart, substantially flat metal plates, the plates being coated with a combustion catalyst for burning creosote, the nest being positioned along the outlet path of the stove, the nest defining a plurality of channels through which gas can flow, the nest having an inlet end and an outlet end, the inlet end being positioned nearer to the combustion area of the stove than the outlet end, such that flue gas can flow into the inlet end and through the channels to the outlet end, each of said plates extending from said inlet end to said outlet end and wherein the distance between adjacent plates of the nest at the inlet end is greater than the distance between adjacent plates at the outlet end so that the distance between adjacent plates becomes continuously smaller in the direction of gas flow.

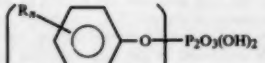
4,425,306

METHOD FOR THE RECOVERY OF URANIUM FROM WET-PROCESS PHOSPHORIC ACID

Edward D. Weil, Hastings-on-Hudson, and Ralph B. Fearing, Bardonia, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 17, 1981, Ser. No. 235,236
Int. Cl.³ C01G 43/00
U.S. Cl. 423—10 14 Claims

1. A method for recovering uranium from a phosphoric acid feed solution containing uranium which comprises treating said feed solution to insure that substantially all of said uranium is in the U^{+4} state, contacting said phosphoric acid feed solution with an organic solution of an alkylphenyl pyrophosphate represented by the structural formula



wherein R represents an alkyl group having from about 1 to about 20 carbon atoms, n represents a number ranging from 1 to 5, at least one of the R groups having at least 4 carbon atoms, provided that when n is greater than 1, the R groups can be the same or different to effect transfer of at least a major portion of said uranium from said phosphoric acid feed solution to said organic solution and recovering said uranium from said organic solution.

4,425,307
HYDROGEN PEROXIDE IN SULFURIC ACID EXTRACTION OF URANIUM ORES

Frederick W. DeVries, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

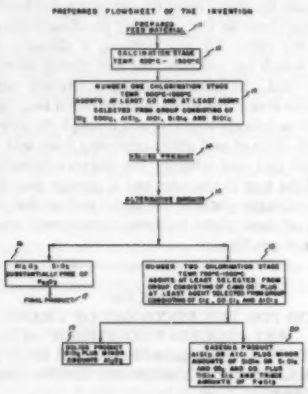
Filed Apr. 22, 1981, Ser. No. 256,675
Int. Cl.³ C01G 43/00; C22B 3/00
U.S. Cl. 423—20 5 Claims

1. In a process for the extraction of uranium from its ores with a leach solution wherein the uranium is oxidized to uranium (VI) oxidation state and then extracted, the improvement which comprises extracting the uranium in the absence of ferric ion at a pH of 2.5 to 5.5 with sulfuric acid, hydrogen peroxide, a trace of ferrous iron and between 0.1 and 1.6 mols of a neutral sulfate per mol of leach solution.

4,425,308
PRODUCTION OF A PURIFIED ALUMINA-SILICA PRODUCT AND SUBSTANTIALLY PURE ALUMINUM CHLORIDE FROM BAUXITES AND CLAYS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada (M4V 2X1)

Continuation-in-part of Ser. No. 377,992, May 13, 1982. This application Sep. 29, 1982, Ser. No. 426,263
Int. Cl.³ C01F 7/02, 7/56
U.S. Cl. 423—136 7 Claims



1. A process for the production of substantially iron free alumina-silica product from the group of raw materials consisting of kaolinitic clays and bauxites wherein said kaolinitic clays contain at least kaolinite with the chemical analysis of Al_2O_3.-$2SiO_2.2H_2O$ and said bauxites contain at least one of the minerals with the chemical analysis of $Al_2O_3.xH_2O$ and at least one silica mineral from the group consisting of $Al_2O_3.2SiO_2.2H_2O$ and SiO_2 and said group of raw materials contain at least iron as iron mineral, the said process comprising:

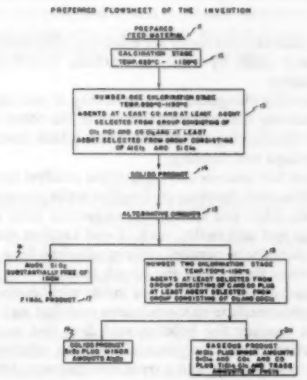
(a) subjecting the said prepared materials to a calcining stage wherein the said materials are heated to within the temperature range of about 625° C. to 1500° C. to remove free moisture and water of crystallization combined in said minerals contained in the said materials and to convert said aluminous and siliceous minerals to alumina and silica, thus producing a solids alumina-silica iron containing calcined solids product; and

(b) subsequently subjecting the said calcined solids product to at least one chlorination stage wherein the said chlorination stage is carried out employing a gas stream containing at least CO and in the presence of at least one chlorination agent selected from the group consisting of Cl_2, $COCl_2$, $AlCl_3$, AlCl, $SiCl_4$ and $SiCl_2$ and wherein the said chlorination agent does not exceed 20% by volume of the said gas stream and wherein the said chlorination stage is carried out in the temperature range of about 850° C. to 1500° C. to produce a chlorinated alumina-silica product substantially free of said iron.

4,425,309
PRODUCTION OF A PURIFIED ALUMINA-SILICA PRODUCT AND SUBSTANTIALLY PURE ALUMINUM TRICHLORIDE FROM BAUXITES AND CLAYS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada M4V 2X1

Continuation-in-part of Ser. No. 377,992, May 13, 1982. This application Sep. 29, 1982, Ser. No. 426,264
Int. Cl.³ C01F 7/02, 7/56
U.S. Cl. 423—136 10 Claims



1. A process for the production of a substantially iron free alumina-silica product from the group of raw materials consisting of kaolinitic clays and bauxites wherein said kaolinitic clays contain at least kaolinite with the chemical analysis of Al_2O_3.-$2SiO_2.2H_2O$ and said bauxites contain at least one of the minerals with the chemical analysis of $Al_2O_3.xH_2O$ and at least one silica mineral from the group consisting of $Al_2O_3.2SiO_2.2H_2O$ and SiO_2 and said group of raw materials contain at least iron as iron mineral, the said process comprising:

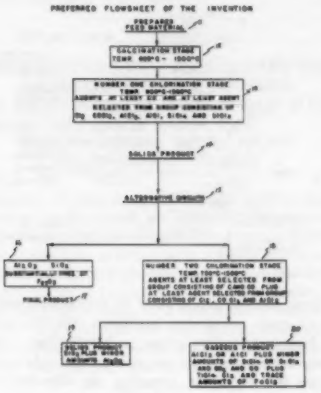
(a) subjecting the said prepared materials to a calcining stage wherein the said materials are heated to within the temperature range of 625° C. to about 1150° C. to remove free moisture and water of crystallization combined in said minerals contained in the said materials and to convert said aluminous and siliceous minerals to alumina and silica thus producing a solids alumina-silica iron containing calcined solids product; and

(b) subsequently subjecting the said calcined solids product to at least one chlorination stage wherein the said chlorination stage is carried out in the presence of starvation amounts of at least one chlorination agent selected from the group consisting of Cl_2, HCl and $COCl_2$ and at least one clorination agent selected from the group consisting of $AlCl_3$ and $SiCl_4$ and in the presence of at least CO and in the temperature range of about 850° C. to 1150° C. to produce a chlorinated alumina-silica product substantially free of said iron.

4,425,310
PRODUCTION OF ALUMINUM CHLORIDES FROM BAUXITES AND CLAYS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada M4V 2X1

Continuation-in-part of Ser. No. 253,639, Apr. 13, 1981, abandoned, and a continuation-in-part of Ser. No. 377,992, May 13, 1982. This application Sep. 29, 1982, Ser. No. 427,943
Int. Cl.³ C01F 7/56, 7/02
U.S. Cl. 423—136 6 Claims


PREFERRED FLOWSHEET OF THE INVENTION
PREPARED FEED MATERIAL
CALCINATION STAGE
TEMP. 600°C - 1000°C
NUMBER ONE CHLORINATION STAGE
TEMP. 900°C-1000°C
AGENTS AT LEAST CO AND AT LEAST AGENT SELECTED FROM GROUP CONSISTING OF Cl2, COCl2, AlCl3, AlCl, SiCl4 AND SiCl2
SOLIDS PRODUCT
ALTERNATIVE GROUPS
NUMBER TWO CHLORINATION STAGE
TEMP 1000°C-1050°C
AGENTS AT LEAST SELECTED FROM GROUP CONSISTING OF Cl2 AND CO PLUS AT LEAST AGENT SELECTED FROM GROUP CONSISTING OF Cl2, CO, SiCl4 AND AlCl3
FINAL PRODUCT
GASEOUS PRODUCT

1. The process steps for the production of substantially iron free aluminum monochloride from the group of prepared materials consisting of kaolinitic clays and bauxites and said materials containing aluminous and siliceous minerals and iron as iron mineral comprising:

(a) subjecting the said prepared materials to a calcining stage wherein the said materials are heated to within the temperature range of about 625° C. to 1500° C. to remove free moisture and water of crystallization combined in said minerals contained in the said materials and to convert said aluminous and siliceous minerals to alumina and silica thus producing a solids alumina-silica iron containing calcined solids product;

(b) subsequently subjecting the said calcined solids product to at least one chlorination stage wherein the said chlorination stage is carried out employing a gas stream containing at least CO and in the presence of at least one chlorination agent selected from the group consisting of Cl_2, $COCl_2$, $AlCl_3$, AlCl, $SiCl_4$ and $SiCl_2$ and wherein the said chlorination agent does not exceed 20% by volume of the said gas stream and wherein the said chlorination stage is carried out in the temperature range of about 850° C. to 1500° C. to produce a chlorinated said solids alumina-silica product substantially free of said iron;

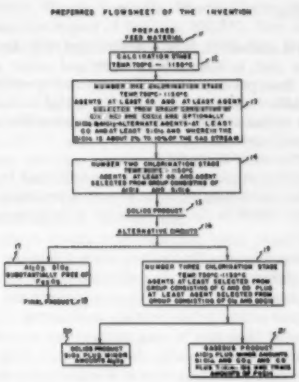
(c) subsequently subjecting the said substantially iron-free alumina-silica product to a further chlorination stage wherein the said chlorination agent is at least one member selected from the group consisting of Cl_2, $COCl_2$ and $AlCl_3$ and in the presence of reducing agent selected from the group consisting of C and CO in the temperature range of about 1150° C. to 1500° C. to chlorinate the said alumina to produce a gaseous product containing at least aluminum monochloride and CO_2 and substantially free of said iron; and

(d) subsequently passing the said gaseous product through a bed selected from the group consisting of devolatilized coke and charcoal in the temperature range of about 1200° C. to about 1600° C. to convert the said CO_2 to CO to produce a gas stream containing at least the said aluminum monochloride and said CO substantially free of said iron.

4,425,311
PRODUCTION OF A PURIFIED ALUMINA-SILICA PRODUCT AND SUBSTANTIALLY PURE ALUMINUM TRICHLORIDE FROM BAUXITES AND CLAYS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada M4V 2X1

Filed May 13, 1982, Ser. No. 377,992
Int. Cl.³ C01F 7/02, 7/56
U.S. Cl. 423—136 13 Claims


PREFERRED FLOWSHEET OF THE INVENTION
PREPARED FEED MATERIAL
CALCINATION STAGE
TEMP 700°C - 1150°C
NUMBER ONE CHLORINATION STAGE
TEMP 700°C - 1150°C
AGENTS AT LEAST CO AND AT LEAST AGENT SELECTED FROM GROUP CONSISTING OF Cl2, NO AND COCl2 AND OPTIONALLY SiCl4 AND/OR ALTERNATE AGENTS AT LEAST CO AND AT LEAST SiCl4 AND WHEREIN THE SiCl4 IS ABOUT 2% TO 10% OF THE GAS STREAM
NUMBER TWO CHLORINATION STAGE
TEMP 800°C - 1150°C
AGENTS AT LEAST CO AND AGENT SELECTED FROM GROUP CONSISTING OF AlCl3 AND SiCl4
SOLIDS PRODUCT
ALTERNATIVE GROUPS
Al2O3, SiO2 SUBSTANTIALLY FREE OF FeCl3
NUMBER THREE CHLORINATION STAGE
TEMP 1000°C-1150°C
AGENTS AT LEAST SELECTED FROM GROUP CONSISTING OF Cl2 AND CO PLUS AT LEAST AGENT SELECTED FROM GROUP CONSISTING OF Cl2 AND SiCl4
FINAL PRODUCT
SOLIDS PRODUCT
GASEOUS PRODUCT

1. A process for the production of a substantially iron free alumina-silica product from the group of raw materials consisting of kaolinitic clays and bauxites wherein said kaolinitic clays contain at least kaolinite with the chemical analysis of $Al_2O_3.2SiO_2.2H_2O$ and said bauxites contain at least one of the minerals with the chemical analysis of $Al_2O_3.xH_2O$ and at least one silica mineral from the group consisting of $Al_2O_3.2SiO_2.2H_2O$ and SiO_2 and said group of raw materials contain at least iron as iron mineral, the said process comprising:

(a) subjecting the said raw material to at least a calcining stage wherein the said mineral is heated to within the temperature range of 625° C. to about 1150° C. to remove free moisture and water of crystallization combined in said minerals contained in the said material and to convert said $Al_2O_3.2SiO_2.2H_2O$ and said $Al_2O_3.xH_2O$ to alumina and silica to produce a calcined solids alumina silica product containing said iron;

(b) subsequently subjecting the said calcined product to a number one chlorination stage to differentially chlorinate the said iron and said chlorination is carried out by a gas stream wherein the chlorination agent is at least one member selected from the group consisting of Cl_2, HCl, and $COCl_2$ and in the presence of at least CO and in the temperature range of about 750° C. to about 1150° C. and said chlorination agent forms less than about 21% of said gas stream to produce a said solids alumina-silica product impoverished in said iron; and

(c) subsequently subjecting the said solids alumina-silica product to a number two chlorination stage to further differentially chlorinate the said iron and said chlorination is carried out by a gas stream wherein the chlorination agent is selected from the group consisting of $SiCl_4$ and $AlCl_3$ and in the presence of at least CO and in the temperature range of about 900° C. to about 1150° C. and said chlorination agent being present in minor amounts of said gas stream to produce a said solids alumina-silica product further impoverished in said iron.

4,425,312

REMOVAL OF SULFUR FROM PROCESS STREAMS

David G. Brignac, Lutcher, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 2, 1982, Ser. No. 394,719
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—230 10 Claims

1. In a process for the removal of sulfur from a moisture containing process gas stream which includes a sulfur sorption portion of an operating cycle wherein said stream is contacted with a metal alumina spinel sorbent characterized by a formula

$$MAl_2O_4$$

wherein M is chromium, iron, cobalt, nickel, copper, cadmium, mercury, or zinc, to adsorb both water and sulfur, and

a sulfur desorption portion of an operating cycle wherein said sulfur-bearing metal alumina spinel sorbent is contacted with a non-reactive gas to desorb sulfur and regenerate said sorbent,

the improvement comprising

adding water to the non-reactive gas sufficient to provide a moisture level ranging from about 0.2 percent to about 50 percent, based on the total volume of the non-reactive gas stream.

4,425,313

REMOVAL AND RECOVERY OF NITROGEN AND SULFUR OXIDES FROM GASEOUS MIXTURES CONTAINING THEM

Hal B. H. Cooper, 4234 Chevy Chase Dr., LaCanada-Flintridge, Calif. 91011

Division of Ser. No. 925,850, Jul. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 804,620, Jun. 8, 1977, abandoned, Ser. No. 823,051, Aug. 10, 1977, abandoned, and Ser. No. 909,026, May 24, 1978, abandoned, which is a continuation of Ser. No. 812,814, Jul. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 714,792, Aug. 16, 1976, abandoned, said Ser. No. 804,620, is a continuation-in-part of Ser. No. 714,793, Aug. 16, 1976, abandoned, said Ser. No. 823,051, is a continuation-in-part of Ser. No. 714,792,. This application Oct. 15, 1981, Ser. No. 311,518
Int. Cl.³ C01B *21/00, 17/00*
U.S. Cl. 423—235 11 Claims

1. A process for removing oxides of sulfur from a combustion gas mixture including carbon dioxide and sulfur dioxide comprising:

a. treating said gas mixture in a zone with an aqueous media which includes the carbonate-bicarbonate of potassium to convert all of the sulfur dioxide absorbed by the aqueous media to dibasic potassium sulfite to form a product aqueous media having a pH in the range of 7–10 and comprising dibasic potassium sulfite, additional monobasic potassium bicarbonate, and additional dibasic potassium carbonate;

b. heating said product aqueous media to convert at least a portion of the monobasic potassium bicarbonate to carbon dioxide and dibasic potassium carbonate;

c. treating the product aqueous media from Step b to convert at least a portion of said dibasic potassium sulfite to potassium sulfate by oxidation with hydrogen peroxide or an oxygen-containing gas;

d. crystallizing and recovering at least a portion of said potassium sulfate from the product aqueous media in the presence of dibasic potassium carbonate at a pH higher than pH = 8.0; and

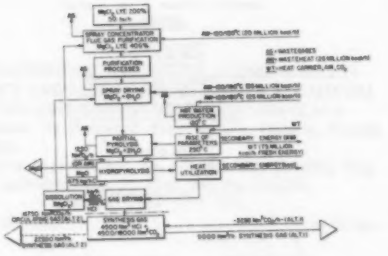
e. recycling the product aqueous media to the zone of said gas treating.

4,425,314

METHOD FOR THE MANUFACTURE OF METAL OXIDE AND HYDROCHLORIC ACID FROM METAL CHLORIDE

Franz J. Gattys, Frankfurter Strasse 168-176, D-6078 Neu Isenburg, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,652
Int. Cl.³ C01B *21/20, 7/01;* C01F *5/10*
U.S. Cl. 423—437 7 Claims



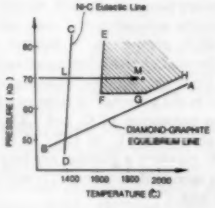
1. Process for the preparation of magnesium oxide and a mixture of gases containing hydrogen chloride and carbon dioxide from magnesium chloride hexahydrate, comprising selectively dehydrating the magnesium chloride hexahydrate to produce the dihydrate, exposing the dihydrate after the addition of coke to a hydropyrolytic treatment with oxygen at a temperature of 600° C. to 800° C. and converting the dihydrate to magnesium oxide and subsequently drying the synthesis gas formed in the hydropyrolysis with the conversion of the magnesium chloride to metal oxide.

4,425,315

DIAMOND SINTERED COMPACT WHEREIN CRYSTAL PARTICLES ARE UNIFORMLY ORIENTATED IN THE PARTICULAR DIRECTION AND THE METHOD FOR PRODUCING THE SAME

Kazuo Tsuji; Shuji Yazu, and Akio Hara, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 158,136, Jun. 10, 1980, Pat. No. 4,333,986. This application Feb. 25, 1982, Ser. No. 352,248
Claims priority, application Japan, Jun. 11, 1979, 57-73670; May 30, 1980, 55-73570
Int. Cl.³ C01B *31/06*
U.S. Cl. 423—446 16 Claims



1. A method for producing a diamond sintered compact having diamond crystal particles uniformly oriented in a particular direction, which comprises placing a carbonaceous

material as a raw material for producing diamond, and a catalytic metal for crystallizing diamond, in layered or concentric relationship to each other, subjecting the resultant assembly to a pressure higher than 65 kb, and then heating the assembly at a temperature rise of at least 100° C./min at least from the eutectic temperature of the catalytic metal and carbon to a predetermined temperature, predetermined pressure and temperature conditions within these limits being maintained for a time sufficient for formation and growth of diamond crystals and sintering of each diamond particle, thereby enabling synchronous transformation of the carbonaceous material into diamond and sintering of the diamond.

4,425,316

DENSIFIED CARBONACEOUS BODIES WITH IMPROVED SURFACE FINISHES

Edward E. Hucke, Ann Arbor, Mich., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Sep. 25, 1981, Ser. No. 305,777
Int. Cl.³ C01B *31/02, 31/04*
U.S. Cl. 423—448 **10 Claims**

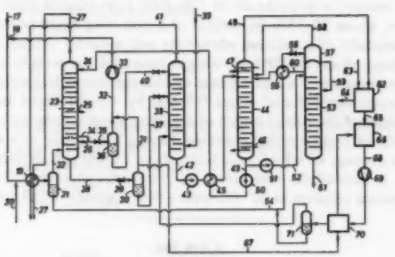
1. A method of producing a densified carbonaceous body with a superior surface finish, said method comprising the steps of: impregnating a permeable body composed essentially of a fine grained, isotropic graphite with a liquid impregnant containing furfural or furfural alcohol or a mixture thereof, an acid catalyst, and a glycol or mixture of glycols; heating the impregnated, permeable body to a temperature which is sufficiently high to polymerize the impregnant; and then heating said body to a temperature which is sufficiently high to carbonized the polymerized impregnant.

4,425,317

RECYCLE OF HYDROGENATED SULFUR PLANT TAIL GAS TO SOUR GAS SCRUBBING SYSTEM

Rainer Zeller, Gruenwald; Aldo Belloni, Puchheim, and Michael Heisel, Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,554
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047830
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—574 R **12 Claims**



1. In a process for the separation of at least carbon dioxide and hydrogen sulfide from a raw gaseous mixture to form a purified gaseous mixture comprising passing said gas through a sour gas removal system including the steps of scrubbing said gaseous mixture with a physical liquid scrubbing agent having a higher absorbability for hydrogen sulfide than for carbon dioxide, removing from said system an off-gas enriched in hydrogen sulfide, and passing said off-gas to a sulfur recovery system comprising the conversion of sulfur values to elemental sulfur and the recovery of a tail gas containing hydrogen sulfide and sulfur dioxide, the improvement which comprises hydrogenating said tail gas to convert sulfur dioxide to hydrogen sulfide and recycling resultant hydrogenated tail gas to said sour gas removal system, said sour gas removal system comprising in series a scrubbing column, a hydrogen-sulfide enrichment column, and a regeneration column, said resultant hydrogenated tail gas being recycled into the hydrogen-sulfide enrichment column, whereby essentially no hydrogen sulfide or sulfur dioxide is discharged into the environment.

4,425,318

HYDRIDING BODY-CENTERED CUBIC PHASE ALLOYS AT ROOM TEMPERATURE

Arnulf J. Maeland, Succasunna; George G. Libowitz, Brookside, and George Rak, Pinebrook, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 320,391, Nov. 12, 1981, abandoned. This application Apr. 5, 1982, Ser. No. 365,119
Int. Cl.³ C01B *6/24*
U.S. Cl. 423—644 **12 Claims**

1. A method of producing metal hydride which comprises reacting hydrogen gas at a temperature between about 0° C. and about 100° C. with a solid solution having a body-centered cubic phase structure comprising:

(a) a first metal forming a body-centered cubic phase structure selected from the group consisting of niobium, tantalum and mixtures thereof; and

(b) dissolved in said body-centered cubic phase structure at least about 0.5 atom percent of a second metal selected from the group consisting of aluminum, cobalt, chromium, iron, manganese, molybdenum, nickel, copper, vanadium, silicon, germanium, gallium and mixtures thereof;

and wherein the reaction rate of said solid solution having said body-centered cubic phase structure with hydrogen at said temperature is at least about twice the reaction rate of said first metal with hydrogen at said temperature and identical hydrogen pressures.

4,425,319

RADIOACTIVE DIAGNOSTIC AGENT AND NON-RADIOACTIVE CARRIER THEREFOR

Akira Yokoyama, Otsu; Yoshiro Omomo, Kyoto; Hisashi Tanaka, Ashiya, and Hideo Saji, Kyoto, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

Filed Feb. 20, 1981, Ser. No. 236,520
Claims priority, application Japan, Mar. 8, 1980, 55-29471
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **22 Claims**

1. A radioactive metallic element-labeled, physiologically active substance-combined compound, which consists of deferoxamine, an organic physiologically active substance chemically bonded thereto with or without intervention of any other chemical bonding and a radioactive metallic element bonded to said deferoxamine through a chelating bond.

4,425,320

METHOD AND APPARATUS FOR CARRYING OUT SOLID PHASE IN VITRO DIAGNOSTIC ASSAYS

David A. Perry, and Peter Stead, both of Portland, Me., assignors to Ventrex Laboratories, Inc., Portland, Me.

Continuation of Ser. No. 93,105, Nov. 13, 1979, abandoned. This application Oct. 1, 1981, Ser. No. 307,540
Int. Cl.³ G01N *33/54, 33/58;* G01T *1/00;* B65D *7/00*
U.S. Cl. 424—1.1 **19 Claims**

1. In a process for carrying out a measurable reaction between a mobile component contained in a fluid sample and a fixed component immobilized on a portion of an impermeable unitary insert matrix, said insert matrix comprising a reactive portion on which said fixed component is immobilized and a handle portion for enabling manual insertion of said insert matrix into a fluid receptacle, and said fluid sample being contained in a fluid receptacle suitable for receiving at least the reactive portion of said insert matrix by manual insertion thereof, the improvement which comprises utilizing, in combination, a fluid receptacle which has a retainer on the inner

surface thereof for confining at least the reactive portion of the insert matrix within the fluid receptacle during inversion thereof, said retainer comprising an integral convex projection on the inner surface of the side wall of the receptacle corresponding to a concave indentation formed on the outer surface of the receptacle, and an insert matrix which has a reactive portion characterized by a generally open configuration per-

mitting fluid to be poured into the fluid receptacle through said reactive portion and decanted from the fluid receptacle through said reactive portion by inversion of the fluid receptacle with the reactive portion of the insert matrix confined therein by said retainer, whereby decanting, washing and measuring operations may be performed while the reactive portion of the insert matrix remains confined within the fluid receptacle.

4,425,321

DEODORANT COMPOSITIONS CONTAINING A POLYCARBOXYLIC ACID SALT

Bernard Jacquet, Antony; Gerard Lang, Epinay-sur-Seine, and Alain Malaval, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

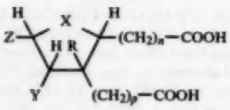
Filed Jul. 28, 1978, Ser. No. 929,193

Claims priority, application France, Jul. 29, 1977, 77 23507

Int. Cl.³ A61K *7/32, 7/36*

U.S. Cl. 424—47 **12 Claims**

1. Deodorant composition comprising at least one zinc or magnesium salt of a polyacid of the general formula:



(I)

in which X is —CH=CH— or CHOH—CHOH—, Y is a hydrogen atom, saturated or unsaturated aliphatic radical of 1 to 10 carbon atoms, which is unsubstituted or substituted by one or more hydroxyls, a saturated or unsaturated alicyclic radical of up to 30 carbon atoms which is unsubstituted or substituted by one or more hydroxyls and/or by a carboxylic acid group, or Y denotes a carboxylic acid radical when p=O, Z denotes a saturated or unsaturated hydrocarbon of up to 6 carbon atoms, n is at integer less than 10, p is 0 or an integer less than or equal to n, and R is a hydrogen atom or a lower alkyl group, or of a positional isomer of such a polyacid and a cosmetically acceptable carrier.

4,425,322

DUAL-ACTION DENTIFRICE

Kenneth Harvey, Wilmslow, and Harry Hayes, Warrington, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,361

Claims priority, application United Kingdom, Jun. 11, 1981, 8117907

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 **18 Claims**

1. A dentifrice comprising;

an aqueous humectant phase I comprising a water-soluble aluminium salt in amount to provide the dentifrice with a non-toxic amount of aluminium ions, the aluminium salt being dispersed in a vehicle comprising about 10–95% by weight of phase I of water and humectant and 0.25–10% by weight of phase I of gelling agent;

and an oil phase II comprising a fluorine-providing compound in amount to provide the dentifrice with an effective anticariogenic non-toxic amount of fluorine corresponding to about 100 to about 10,000 ppm fluoride ions, the fluorine providing compound being dispersed in a vehicle comprising about 20–85% by weight of phase II of a non-toxic oil substantially immiscible with phase I;

wherein the surface tensions of the two phases produce a sufficiently large interfacial tension to maintain immiscibility; phase I and phase II being present in a weight ratio of about 50:1 to 0.6:1; and at least of one of phase I and phase II comprising a dentally acceptable water-insoluble polishing agent in amount of about 20–75% by weight of the dentifrice.

4,425,323

SMOOTH DENTAL CREAM

Anthony J. Morton, Ashton-Under-Lyme; Kenneth Harvey, Wilmslow, both of England, and Hermann Gutenberg, Gossau, Switzerland, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,781

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 **6 Claims**

1. A dental cream which does not form a tail upon extrusion comprising a binary fluorine source of a mixture of sodium monofluorophosphate and sodium fluoride in which about 30–40% by weight of said fluorine is from said sodium fluoride, in amount to provide about 750–2000 ppm total of ionic fluorine, about 35–75% by weight of a polishing agent consisting essentially of a calcium phosphate and a dental vehicle comprising about 20–80% by weight based on the weight of the dental cream of a liquid phase containing water, humectant or mixture thereof and about 0.5–5% by weight based on the weight of the dental cream of a gelling agent consisting essentially of hydroxyethyl cellulose having a viscosity in a range the average of which is at least, about 24,000 cps, determined on a Brookfield viscometer in 2% water:glycerine (1:1.56) aqueous solution at 20° C., with a No. 6 spindle at 20 rpm.

4,425,324

HAZED TOOTHPASTE

Kenneth Harvey, Wilmslow; Stephen T. Connors, Sale, both of England, and Eric Baines, Sydney, Australia, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 262,013, May 11, 1981, Pat. No. 4,356,168. This application Aug. 11, 1982, Ser. No. 407,222

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.³ A61K *9/16, 9/18*

U.S. Cl. 424—52 **8 Claims**

1. A hazed toothpaste packaged in an unlined aluminium toothpaste tube comprising a binary fluorine-providing system which provides about 750–1225 ppm fluorine from sodium monofluorophosphate and about 50–1000 ppm fluorine from sodium fluoride and about 15–40% by weight of a synthetic

precipitated siliceous polishing agent wherein there is present about 0.1–2.5% by weight of dicalcium phosphate which provides a hazed appearance to the toothpaste and stabilizes it against gassing when packaged in an unlined aluminium toothpaste tube and against colour fading when the toothpaste contains a water-soluble non-toxic dyestuff.

4,425,325

ORAL COMPOSITIONS

Thomas W. Ritchey, Norwood; John M. Weaver, North Bergen, and Martin Sapone, Tenafly, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 235,247, Feb. 17, 1981, Pat. No. 4,339,432, which is a continuation-in-part of Ser. No. 50,392, Jun. 20, 1979, and Ser. No. 50,393, Jun. 20, 1979. This application Feb. 3, 1982, Ser. No. 345,453

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.³ A61K *7/16, 7/22*

U.S. Cl. 424—54 **13 Claims**

1. An oral composition having a pH of about 4.5 to about 9.4 comprising a physiologically acceptable zinc compound at a level sufficient to produce about 50 to about 30,000 parts per million of zinc wherein said zinc compounds may have a tendency to produce the organoleptically displeasing effect of astringency and glycine at a level of about 0.01% to about 7% by weight, based on the total weight of the composition as the essential effective agent reducing astringency or said glycine serving to effectively solubilize said zinc compounds.

4,425,326

ANHYDROUS NAIL VARNISHES

Michel Guillon, Bourg-La-Reine; Jean Mondet, Sevran; Christos Papantoniou, Montmorency, and Claudine Vandenbossche, Aulnay-Sous-Bois, all of France, assignors to Societe Anonyme dite : L'Oreal, Paris, France

Filed Mar. 24, 1981, Ser. No. 247,207

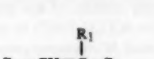
Claims priority, application France, Apr. 1, 1980, 80 07328

Int. Cl.³ C08F *20/06, 20/56;* **A61K** *7/04*

U.S. Cl. 424—61 **9 Claims**

1. A substantially anhydrous nail varnish which contains in an organic solvent system for varnish from 3 to 35% by weight of a copolymer resulting from the copolymerization of:

(1) 5 to 30% by weight of at least one unsaturated polar monomer of the formula:



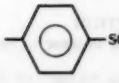
(I)

in which: R_1 represents H, $-CH_3$ or $-CH_2COOH$; such that if R_1 represents H, R_2 represents either

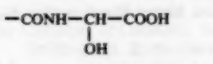
(a) H, in which case R_3 represents:

(i) —COOH

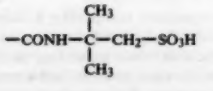
(ii) $-SO_3H$



(iii)



(iv)



(v)

or

(vi) $-COOR_4$,

R_4 representing a glycidyl radical, a mono- or di-hydroxyalkyl radical, the alkyl radical having from 2 to 4 carbon atoms, or the radical $-(CH_2-CH_2-O)l-R'$, R' representing a methyl or ethyl radical and l representing 3 or 4, or

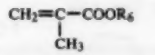
(b) —COOH, in which case R_3 represents:

(vii) $-CO_2R_5$ or

(viii) $-CONHR_5$

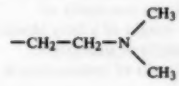
R_5 represents H or an alkyl radical having from 1 to 4 carbon atoms; and if R_1 represents $-CH_3$ or $-CH_2COOH$, R_2 represents H and R_3 represents —COOH or $-COOR_4$;

(2) 1 to 90% by weight of at least one methacrylate monomer of the formula:



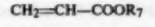
(II)

in which: R_6 represents a linear or branched alkyl radical having up to 18 carbon atoms, or the radical



and

(3) 1–90% by weight of at least one acrylate monomer of the formula:



(III)

in which: R_7 represents a linear or branched alkyl radical having up to 18 carbon atoms, said copolymer having a molecular weight of 10,000 to 200,000 measured by osmometry.

4,425,327

METHOD OF SUPPRESSING BODY ODOR WITH AMINOBENZOIC ACID AMIDES

Hinrich Möller, and Rainer Osberghaus, both of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,816

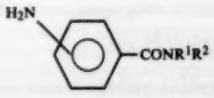
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009542

Int. Cl.³ A61K *7/32, 7/035*

U.S. Cl. 424—65 **5 Claims**

1. A process for suppressing body odor in a warm-blooded animal comprising applying topically to said warm-blooded animal an effective deodorant amount of a cosmetic deodorant composition which comprises:

(a) from about 0.1 to 5 percent by weight, based on the weight of the total composition, of aminobenzoic acid amides of the formula



wherein R^1 and R^2, which may be the same or different, each represent an alkyl of from 1 to 12 carbon atoms; a hydroxyalkyl of from 2 to 4 carbon atoms; a phenyl or benzyl radical; a carboxyalkyl with from 1 to 3 carbon atoms in the alkyl moiety; or an alkoxyalkyl with from 1 to 8 carbon atoms in the alkoxy moiety and from 1 to 3

carbon atoms in the alkyl moiety, or R^1 and R^2 together with the amide nitrogen form a piperidino or morpholino group which is unsubstituted or substituted by one or more methyl groups; and

(b) the remainder inert cosmetic adjuvant compounds.

4,425,328

SOLID ANTIPERSPIRANT STICK COMPOSITION

Wanda E. Nabial, Garfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 21, 1981, Ser. No. 333,232
Int. Cl.³ A61K *7/34, 7/36, 7/38*
U.S. Cl. 424—68 7 Claims

1. A solid antiperspirant stick composition consisting essentially of:

A. about 15 to 35 percent by weight of an astringent material suspended in

B. a waxy matrix, comprising about 17 to 30 percent by weight of said composition and consisting essentially of:

(1) about 15 to 25 percent by weight of a fatty alcohol,

(2) about 1 to 3 percent by weight of stearic acid,

(3) about 1 to 2 percent by weight of hydroxystearic acid; said matrix containing

C. an emollient, comprising about 30 to 55 percent by weight of said composition and consisting essentially of:

(1) about 15 to 28 percent by weight of a volatile silicone compound,

(2) about 15 to 25 percent by weight of a liquid polyoxypropylene-alkyl ether,

(3) about 0 to 5 percent by weight of mineral oil;

said astringent material being suspended in said waxy matrix using a suspending agent.

4,425,329

WATER-IN-OIL TYPE COSMETIC COMPOSITION

Hisao Tsutsumi, Miyashiro; Kazumi Hori, Koganei, and Junichi Kawano, Sakura, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1980, Ser. No. 181,669
Claims priority, application Japan, Sep. 7, 1979, 54-114792
Int. Cl.³ A61K *7/06;* A01N *61/02, 25/00*
U.S. Cl. 424—70 21 Claims

1. A water-in-oil type cosmetic composition which comprises:

(A) a cosmetic oil base material;

(B) water; and

(C) an emulsifier comprising the following three components:

(1) 94 to 43% by weight of α-mono(methyl-branched alkyl) glyceryl ether represented by the formula (I):

$$R—OCH_2CH(OH)CH_2OH \quad (I)$$

where, R is a methyl-branched saturated hydrocarbon group having 14 to 20 carbon atoms;

(2) 0.4 to 9.8% by weight of a multi-valent metal salt of a saturated or unsaturated aliphatic acid having 10 to 22 carbon atoms; and

(3) 8 to 54% by weight of at least one inorganic or organic salt having a solubility in water of at least 0.2 g per 100 g of water at 20° C.

4,425,330

BOVINE MASTITIS VACCINE AND METHOD FOR DETECTING EFFICACY THEREOF

Neil L. Norcross, and Johanna P. Opdebeeck, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 20, 1981, Ser. No. 265,287
Int. Cl.³ A61K *39/09, 39/085*
U.S. Cl. 424—92 6 Claims

1. A vaccine effective for the prevention and/or control of gram-positive cocci caused bovine mastitis which comprises:

an active ingredient component containing per dose:

in total combination a bovine mastitis preventing or controlling amount of at least one of (a) or (b):

(a) at least one *S. aureus* somatic antigen which is an encapsulated antigen derived from a bovine isolated inactivated *S. aureus;* or

(b) a bovine mastitis preventing or controlling amount of at least one unencapsulated *S. aureus* antigen which is derived from a bovine isolated inactivated *S. aureus;* and

(c) in total combination a bovine mastitis preventing and controlling amount of at least one of *Str. agalactiae* antigen derived from a bovine isolated inactivated *Str. agalactiae;* the antigen being derived from at least one of inactivated *Str. agalactiae,* Type I (Ia or Ib or Ic or mixtures), Type II and Type III; the amount of each of said *Str. agalactiae* antigen present being an amount sufficient to contribute at least about 17–280 mg N per dose;

said active component being emulsified with sufficient mineral oil to provide enhanced vaccine response when administered to a bovine.

4,425,331

BIOLOGICAL CONTROL

Joseph N. Concannon, 107 Briarcliff Dr., East Norwich, N.Y. 11732

Filed Oct. 13, 1981, Ser. No. 311,008
Int. Cl.³ A01N *63/00;* C12N *1/20*
U.S. Cl. 424—93 12 Claims

2. A composition useful for controlling insect population which comprises a biologically pure culture of the microorganism *Micrococcus pseudoflaccidifex* ATCC 31970 in an environmentally safe medium wherein said *Micrococcus pseudoflaccidifex* is initially present in a concentration sufficient to cause disease in insects.

4,425,332

ANTACID COMPOSITION

Michael H. James, Flamstead, England, assignor to Beecham Group Limited, England

Filed Sep. 20, 1979, Ser. No. 77,196
Claims priority, application United Kingdom, Sep. 21, 1978, 37617/78
Int. Cl.³ A61K *37/48, 31/10, 33/06, 33/08*
U.S. Cl. 424—94 7 Claims

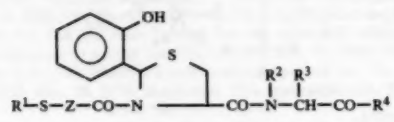
1. A shaped antacid composition comprising a dispersion from 4 to 25% by weight of a finely divided solid aluminum, magnesium or calcium antacid in a base consisting essentially of a two-phase system of solid sugar particles and a saturated sugar solution, the water content of the composition being from 6 to 15% by weight.

4,425,333
SULFUR-CONTAINING ACYLAMINO ACIDS

Jun-ichi Iwao, Takarazuka; Masayuki Oya, Ibaraki, and Tadashi Iso, Sakai, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00074, § 371 Date Oct. 19, 1981, § 102(e) Date Oct. 19, 1981, PCT Pub. No. WO81/02893, PCT Pub. Date Oct. 15, 1981
PCT Filed Apr. 2, 1981, Ser. No. 314,064
Claims priority, application Japan, Apr. 2, 1980, 55-44358
Int. Cl.³ C07C 103/52; A61K 37/02
U.S. Cl. 424—177 16 Claims

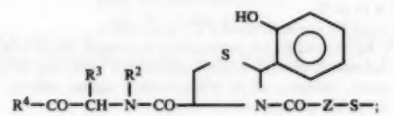
1. A compound of the formula (I)



(I)

wherein

R_1 is hydrogen, lower alkanoyl, benzoyl or



R^2 is hydrogen;

R^3 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, or phenyl or phenyl-lower alkyl substituted by hydroxy, lower alkoxy, amino carboxy, carbamoyl, mercapto, lower alkylthio, lower-alkanoyl-mercapto, imidazoyl or indolyl;

R^2 and R^3 may be joined to form a pyrrolidine ring;

R^4 is a hydroxy or lower alkoxy;

Z is straight or branched alkylene having 1 to 3 carbon atoms; and pharmaceutically acceptable salts of said compound.

16. (2S)-N-[(1-(S-Benzoyl-3-mercaptopropanoyl)-5-(2-hydroxyphenyl)-2-pyrrolidinyl]carbonyl]phenylalanine.

4,425,334
FUNCTIONAL OXYGEN TRANSPORT SYSTEM

C. Anthony Hunt, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 2, 1982, Ser. No. 364,919
Int. Cl.³ A61K 37/00, 35/14
U.S. Cl. 424—177 30 Claims

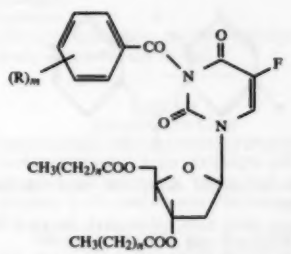
1. An oxygen transport system comprising an emulsion including an inner aqueous phase having crystalline hemoglobin dissolved therein, and an oil phase acting as an artificial membrane enclosing said inner aqueous phase, said oil phase including physiologically acceptable lipids and nonreducing carbohydrate-lipid addition products.

4,425,335
ESTER DERIVATIVES OF ALKOXYBENZOYLDEOXYFLUOROURIDINE

Setsuro Fujii, Toyonaka; Bompei Yasui, Ikoma; Mitsuo Nakamura, Kyoto; Mitsuru Hirohashi, Ikoma; Tomohisa Miyamoto, Settsu; Kazuko Ando, Hirakata; Iwao Hashimoto; Naoki Umeda, both of Osaka, and Masahiro Kawasaki, Kashihara, all of Japan, assignors to Funai Yakuhin Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1981, Ser. No. 291,809
Claims priority, application Japan, Sep. 11, 1980, 55-126776
Int. Cl.³ A61K 31/70; C07H 19/08
U.S. Cl. 424—180 15 Claims

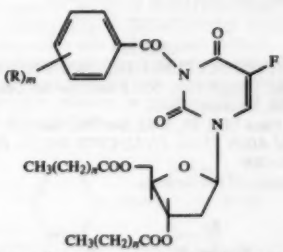
1. An ester derivative of alkoxybenzoyldeoxyfluorouridine of the general formula:



(I)

wherein R is an alkoxy group having 1 to 4 carbon atoms, m is 1 or 2, and n is 3 or 4, and when m is 2, the adjacent two R's may be combined to form an alkylenedioxy group as a whole.

6. A pharmaceutical composition containing as an active ingredient an effective anti-tumor amount of an ester derivative of alkoxybenzoyldeoxyfluorouridine of the general formula:



wherein R is an alkoxy group having 1 to 4 carbon atoms, m is 1 or 2, and n is 3 or 4, and when m is 2, the adjacent two R's may be combined to form an alkylenedioxy group as a whole and a pharmaceutically acceptable carrier or diluent.

4,425,336
3,4-DIHYDROXY-N-[3-(4-DIHYDROXYPHENYL)-1-METHYL-N-PROPYL]-BETA-PHENETHYLAMINE CYCLODEXTRIN COMPLEXES

Ronald R. Tuttle, Plantation, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed May 24, 1982, Ser. No. 381,567
Int. Cl.³ A61K 31/73; C08B 37/16
U.S. Cl. 424—180 3 Claims

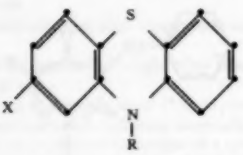
1. A complex of 3,4-di-hydroxy-N-[3-(4-hydroxyphenyl)-1-methyl-n-propyl]-beta-phenethylamine and at least one mole cyclodextrin per mol 3,4-di-hydroxy-N-[3-(4-hydroxyphenyl)-1-methyl-n-propyl]-beta-phenethylamine.

4,425,337
ADJUVANTS FOR RECTAL DELIVERY OF DRUG

Jose Alexander, and Joseph A. Fix, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 30, 1981, Ser. No. 335,498
Int. Cl.³ A61U *31/54, 31/71*
U.S. Cl. 424—181 **4 Claims**

1. A method for enhancing the rate of absorption of a rectally administered drug from a rectal compartment into the blood stream, said method comprising the steps of preparing a drug form capable of being rectally administered, said drug form comprising a therapeutically effective dosage amount of a β-lactam antibiotic capable of being absorbed into the blood stream from the rectal compartment, and a phenothiazine of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

X is hydrogen, alkyl, halo, trihaloalkyl, thioalkyl, alkylsulfoxide or ketoalkyl; and

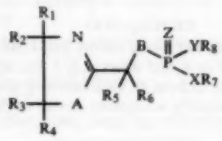
R is dialkylaminoalkyl, N-alkylpiperazinoalkyl, N-alkylpiperazinoalkyl or N-alkylpiperidinoalkyl wherein additionally the piperazino group can be substituted with hydroxyalkyl thereof as adjuvant, said adjuvant being present in said drug form in a sufficient amount to be effective in enhancing said absorption rate and said adjuvant being present in the drug form at from 10–500 mg in each unit dose and being present in a ratio of 5% to 50% of adjuvant to adjuvant plus drug, and administering said drug form into said rectal compartment.

4,425,338
ALPHA-HETEROCYCLIC CARBINOL PHOSPHATES

Jamin Huang, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1982, Ser. No. 364,074
Int. Cl.³ A01N *57/16, 57/32;* **C07D** *263/56, 263/14*
U.S. Cl. 424—200 **30 Claims**

1. Compounds of the formula:



wherein:

A is O or S;

B is O, S or NH;

X is O or S

Y is S or NH;

Z is O or S;

R_7 and R_8 are individually C_1 to C_6 alkyl;

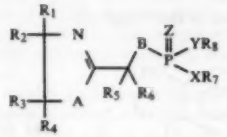
R_1, R_2, R_3 and R_4 are individually hydrogen, alkyl, halogen, haloalkyl, phenyl, phenyl substituted with one or more nitro, halogen, alkyl, trifluoroalkyl, cyano, alkoxy, and alkylthio groups; or

R_1, R_2, R_3 and R_4 together form a 6-membered aromatic ring which is non-substituted or alkyl, alkoxy, alkylthio, halo, nitro, cyano, trifluoromethyl, phenoxy, phenyl, trifluoromethoxy, phenylthio, alkylcarbonyl, alkoxycarbonyl, alkylaminocarbonyl substituted;

R_5 is hydrogen, cyano, alkyl, or alkynyl;

R_6 is non-substituted phenyl or alkyl, alkylthio, alkoxy, halo, nitro, cyano, alkylamino, dialkylamino, trifluoromethyl, phenoxy, phenylthio, halophenoxy, or alkynyl substututed phenyl.

21. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound of the formula:



wherein:

A is O or S;

B is O, S or NH;

X is O or S;

Y is S or NH;

Z is O or S;

R_7 and R_8 are individually C_1 to C_6 alkyl;

R_1, R_2, R_3 and R_4 are individually hydrogen, alkyl, halogen, haloalkyl, phenyl, phenyl substituted with one or more nitro, halogen, alkyl, trifluoroalkyl, cyano, alkoxy, and alkylthio groups; or

R_1, R_2, R_3 and R_4 together form a 6-membered aromatic ring which is non-substituted or alkyl, alkoxy, alkylthio, halo, nitro, cyano, trifluoromethyl, phenoxy, phenyl, trifluoromethoxy, phenylthio, alkylcarbonyl, alkoxycarbonyl, alkylaminocarbonyl substituted;

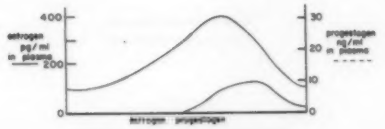
R_5 is hydrogen, cyano, alkyl, or alkynyl;

R_6 is non-substituted phenyl or alkyl, alkylthio, alkoxy, halo, nitro, cyano, alkylamino, dialkylamino, trifluoromethyl, phenoxy, phenylthio, halophenoxy, or alkynyl substututed phenyl.

4,425,339
TREATMENT OF MENOPAUSAL SYMPTOMS

Alan G. Pitchford, Berkshire, England, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 9, 1981, Ser. No. 252,518
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—239 **14 Claims**



1. A method for treating menopausal symptoms in the female human, which method comprises administering to a subject in need of such treatment, a daily sequence of unit dosages over a repeating cycle, which dosage sequence comprises:

(a) administering, as phase one, for a period of 4–9 days, a natural estrogen in daily dosages corresponding in estrogenic activity to about 0.2-1.5 mg of estrone, followed by

(b) administering, as phase two, for a period of 6–11 days, daily dosages of a combination of a natural estrogen and a styptic progestogen, wherein the amounts of estrogen and progestogen are approximately equal by weight and correspond in estrogenic activity to about 0.2–1.5 mg of estrone, and in progestogenic activity to about 0.2–1.5 mg of norethisterone, followed by

(c) administering, as phase three, for a period of 6–90 days, a combination of a natural estrogen and a styptic progestogen in daily dosages twice those administered in phase two, followed by

(d) administering, as phase four, no therapeutically active dosage, i.e., either no treatment or a placebo, for 6–8 days.

4,425,340

CEPHEM AND CEPHAM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Sulta, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 255,301, Apr. 17, 1981, Pat. No. 4,390,534, which is a continuation-in-part of Ser. No. 160,904, Jun. 18, 1980, Pat. No. 4,381,299, which is a continuation-in-part of Ser. No. 128,260, Mar. 7, 1980, Pat. No. 4,331,665, which is a continuation-in-part of Ser. No. 116,984, Jan. 30, 1980, Pat. No. 4,332,798, which is a continuation-in-part of Ser. No. 108,161, Dec. 28, 1979, abandoned. This application Oct. 22, 1981, Ser. No. 314,045

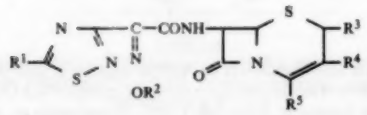
Claims priority, application United Kingdom, Dec. 29, 1978, 50334/78; Oct. 12, 1979, 7935538; South Africa, Oct. 1, 1980, 80/6068

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ A61K *31/545*

U.S. Cl. 424—246 **16 Claims**

1. New cephem compounds of the formula:



wherein

R^1 is amino or a protected amino;

R^2 is carboxy(lower)alkyl or protected carboxy(lower)alkyl;

R^3 is hydrogen or lower alkyl;

R^4 is hydrogen, halogen, lower alkyl or lower alkoxy; and

R^5 is carboxy or a protected carboxy.

16. An antibacterial composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,425,341

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Kohamanishi; Kiyoshi Tsuji, Sumiyoshi, and Toshiyuki Chiba, Nara, all of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

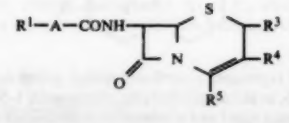
Filed Mar. 14, 1978, Ser. No. 886,340

Claims priority, application United Kingdom, Mar. 14, 1977, 10699/77; Jul. 12, 1977, 29245/77; Oct. 11, 1977, 42315/77; Jan. 3, 1978, 75/78

Int. Cl.³ C07D *501/22*; A61K *31/545*

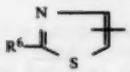
U.S. Cl. 424—246 **51 Claims**

1. A compound of the formula:



wherein

R^1 is thiazolyl of the formula:



in which R^6 is amino or protected amino,

A is a group of the formula:

in which R^2 is hydrogen,

R^3 is hydrogen,

R^4 is hydrogen,

R^5 is carboxy or functionally modified carboxy, and pharmaceutically acceptable salt thereof.

4,425,342

1-(SUBSTITUTED) PIPERAZINE-4-BENZENESULFINAMIDES, COMPOSITIONS AND METHOD OF USE

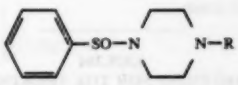
Richard C. Allen, and Solomon S. Klioze, both of Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Somerville, N.J.

Filed Mar. 29, 1979, Ser. No. 24,930

Int. Cl.³ A61K *31/495*; C07D *295/00, 401/12*

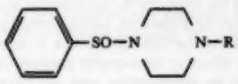
U.S. Cl. 424—250 **23 Claims**

1. A compound of the formula



wherein R is pyridyl, phenyl or phenyl substituted by halogen, loweralkyl, loweralkoxy or trifluoromethyl and the pharmaceutically acceptable acid addition salts thereof.

20. A blood pressure reducing composition comprising an inert blood pressure reducing adjuvant and as the active ingredient, an amount effective in reducing blood pressure of a compound of the formula



wherein R is pyridyl, phenyl or phenyl substituted by halogen, loweralkyl, loweralkoxy or trifluoromethyl.

4,425,343

BENZOAZINE ETHER OR THIOETHER LINKAGE CONTAINING UREA COMPOUNDS, PROCESS FOR PRODUCING SAME AND INSECTICIDES CONTAINING SAID COMPOUNDS

Gojyo Sakata; Kenji Makino; Yasuo Kawamura; Jun Sato; Kiyomi Ozawa, all of Funabashi; Masayoshi Hirose, and Kiminori Hirata, both of Saitama, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

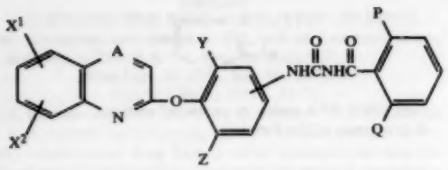
Filed May 26, 1981, Ser. No. 267,077

Claims priority, application Japan, Oct. 24, 1980, 55-149015; Mar. 30, 1981, 56-46851

Int. Cl.³ C07D *241/44, 215/22*; A61K *31/495, 31/47*

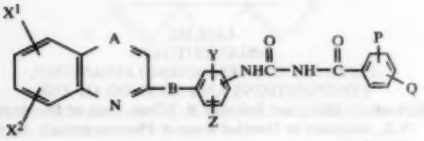
U.S. Cl. 424—250 **20 Claims**

1. A heterocyclic ether or thioether linkage containing urea compound of the formula I:



wherein A denotes nitrogen, X^1 and X^2 denote independently of each other hydrogen, halogen or trifluoromethyl, Y and Z denote independently of each other hydrogen or chlorine, and P and Q denote independently of each other hydrogen or halogen.

8. A method for controlling insects, comprising administering an insecticidally effective amount of a compound having the formula:



wherein B denotes oxygen or sulfur, A denotes nitrogen, X^1 and X^2 denote independently of each other hydrogen, halogen trifluoromethyl group or nitro group, Y and Z denote independently of each other hydrogen atom or halogen, and P and Q denote independently of each other hydrogen halogen, alkoxyl group or alkyl group.

4,425,344

COMPOSITIONS FOR THE TREATMENT OF GLAUCOMA CONTAINING TRIAMTERENE

Michael Horlington, Bishops Stortford, England, assignor to Smith and Nephew Associated Companies Limited, United Kingdom

Filed Jul. 27, 1981, Ser. No. 287,356

Claims priority, application United Kingdom, Aug. 1, 1980, 8025286; Jan. 8, 1981, 8100521; Apr. 2, 1981, 8110448

Int. Cl.³ A61K *31/505*

U.S. Cl. 424—251 **30 Claims**

1. A method for reducing the intra-ocular pressure in the eye of a patient having glaucoma which comprises topically administering to the surface of the eye a sterile composition comprising an effective intra-ocular pressure reducing amount of triamterene in combination with an ocularly acceptable carrier.

4,425,345

PHARMACEUTICAL COMPOSITION CONTAINING TRIAMTERENE

Michael Horlington, Bishops Stortford, and Lindsey V. Scott, London, both of England, assignors to Smith and Nephew Associated Companies Limited, England

Continuation-in-part of Ser. No. 287,356, Jul. 27, 1981. This application Dec. 8, 1981, Ser. No. 328,729

Claims priority, application United Kingdom, Aug. 1, 1980, 8025286; Jan. 8, 1981, 8100521; Apr. 2, 1981, 8110448; Jul. 21, 1981, 8122410; Jul. 28, 1981, 8123222

Int. Cl.³ A61K *31/505*

U.S. Cl. 424—251 **30 Claims**

1. A method for reducing the intra-ocular pressure in the eye of a patient having glaucoma which comprises topically applying to the surface of the eye a sterile, aqueous solution comprising an effective intra-ocular pressure reducing amount of triamterene rendered soluble by an effective solubilizing amount of a water soluble xanthine.

4,425,346

PHARMACEUTICAL COMPOSITIONS

Michael Horlington, Bishops Stortford, England, assignor to Smith and Nephew Associated Companies Limited, United Kingdom

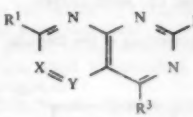
Continuation-in-part of Ser. No. 287,356, Jul. 27, 1981. This application Jan. 25, 1982, Ser. No. 342,655

Claims priority, application United Kingdom, Feb. 9, 1981, 8103917; Mar. 18, 1981, 8108537

Int. Cl.³ A61K *31/505, 31/52*

U.S. Cl. 424—253 **61 Claims**

1. A method for reducing the intra-ocular pressure in the eye of a patient having glaucoma which comprises topically applying of the surface of the eye a sterile composition comprising an effective intra-ocular pressure reducing amount of a compound of the formula (I):



(I)

wherein X=Y is CR=N or N=CR wherein at least two of R,R^1,R^2 and R^3 are amino and the other groups of R,R^1,R^2 and R^3 are hydrogen, lower alkyl, aryl, carboxamido or lower alkoxycarbonyl, in combination with an ocularly acceptable carrier.

4,425,347

PERFLUOROBICYCLO COMPOUND EMULSION PREPARATION

Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuka; Taizo Ono, Osaka; Yoshio Arakawa, Suita; Yoshihisa Inoue, Kyoto; Youichiro Naito, Hirakata, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

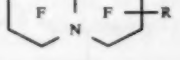
Filed Dec. 28, 1982, Ser. No. 454,105

Claims priority, application Japan, Sep. 9, 1982, 57-157677

Int. Cl.³ A61K *31/435*

U.S. Cl. 424—256 **6 Claims**

1. A perfluorobicyclo compound emulsion preparation having oxygen carrying ability comprising 5–50% (w/v) of perfluorobicyclo compound of the general formula



wherein R represents a perfluoromethyl group or perfluoroethyl group, as an oxygen carrying component, 1–5% (w/v) of an emulsifying agent and a balance of a physiologically acceptable aqueous solution, and the emulsion having a particle diameter of 0.3μ or less.

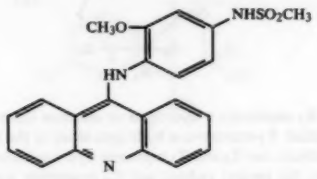
4,425,348

ANTITUMOR COMPOSITIONS

Murray A. Kaplan, Syracuse, N.Y.; Daniel Bouzard, Francon-ville, France; Claude Perol, Paris, France; Jacques Stemer, Paris, France, and Abraham Weber, Paris, France, assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 147,056, May 16, 1980, Pat. No. 4,360,523. This application Aug. 31, 1981, Ser. No. 297,799
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ A61K *31/435*
U.S. Cl. 424—257 11 Claims

1. A solid pharmaceutical composition for reconstitution with water to give a stable aqueous solution of m-AMSA, said composition consisting of m-AMSA having the formula



in admixture with lactic acid and a pharmaceutically acceptable non-active carrier excipient, the molar ratio of lactic acid to m-AMSA being from about 1.5:1 to 4:1.

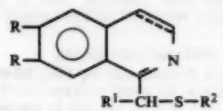
4,425,349

SULFUR-CONTAINING ISOQUINOLINE DERIVATIVES IN PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Kalman Takacs; Maria H. Papp; Gabor Kovacs; Ilona K. Ajzert; Antal Simay; Peter Literati Nagy; Marian E. Puskas; Gyula Sebestyen; Istvan Stadler, and Zoltan Sümeghy, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Division of Ser. No. 164,939, Jul. 1, 1980, Pat. No. 4,373,104. This application May 25, 1982, Ser. No. 381,775
Claims priority, application Hungary, Jul. 2, 1979, CI 1944
Int. Cl.³ A61K *31/47*
U.S. Cl. 424—258 4 Claims

1. A pharmaceutical composition having the ability to promote the bosynthesis of prostaglandin E_2 from arachidonic acid which comprises as active ingredient a pharmaceutically effective amount of a compound of the formula (I)



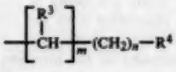
(I)

wherein

R is hydrogen, hydroxyl or C_1 to C_4 alkoxy;

R^1 is hydrogen, C_1 to C_4 alkyl, cyano, carbamoyl, phenyl-C_1 to C_4 alkyl, phenyl, halo-phenyl, or C_1 to C_4 alkoxy-phenyl;

R^2 is allyl, phenyl, halo-phenyl, C_1 to C_4 alkoxy-phenyl, carboxy-phenyl, or a group of the formula (A)



(A)

wherein

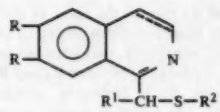
R^3 is hydrogen, C_1 to C_4 straight or branched chain alkyl, or phenyl;

m and n are each 0,1 or 2 and m+n is at least 1; and

R^4 is hydrogen, phenyl, hydroxyl, acetoxy, carboxyl, C_1 to C_6 alkoxycarbonyl, carbamoyl, carbazoyl, or dialkylamino having 1 to 6 carbon atoms in each alkyl moiety; and

the dotted line stands for a further carbon-carbon bond or a hydrogen atom in each of the 3- and 4-positions of the molecule, or a pharmaceutically effective salt thereof, in admixture with a pharmaceutically acceptable inert carrier.

3. A diuretic, antiasthmatic, antiinflammatory, and hypotensive pharmaceutical composition which comprises as active ingredient a pharmaceutically effective amount of a compound of the formula (I)



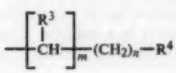
(I)

wherein

R is hydrogen, hydroxyl, or C_1 to C_4 alkoxy;

R^1 is hydrogen, C_1 to C_4 alkyl, cyano, carbamoyl, phenyl-C_1 to C_4 alkyl, phenyl, halo-phenyl, or C_1 to C_4 alkoxy-phenyl;

R^2 is allyl, phenyl, halo-phenyl, C_1 to C_4 alkoxy-phenyl, carboxy-phenyl or a group of the formula (A)



(A)

wherein

R^3 is hydrogen, C_1 to C_4 straight or branched chain alkyl, or phenyl;

m and n are each 0,1 or 2 and m+n is at least 1; and

R^4 is hydrogen, phenyl, hydroxyl, acetoxy, C_1 to C_6 alkoxycarbonyl, carbamoyl, carbazoyl, or dialkylamino having 1 to 6 carbon atoms in each alkyl moiety; and

the dotted line stands for a further carbon-carbon bond or a hydrogen atom in each of the 3- and 4-positions of the molecule, or a pharmaceutically effective salt thereof, in admixture with a pharmaceutically acceptable inert carrier.

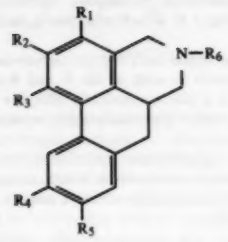
4,425,350

5,6,6a,7-TETRAHYDRO-4H-DIBENZ(de,g)-ISOQUINOLINE DERIVATIVES, AND THEIR USE FOR TREATING CENTRAL NERVOUS SYSTEM DISORDERS

Johannes Hartenstein, Stegen-Wittental, and Edgar Fritschi, St. Peter, both of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

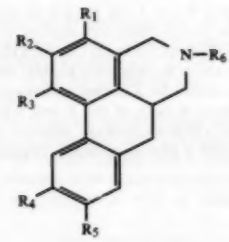
Filed Apr. 3, 1981, Ser. No. 251,000
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013346
Int. Cl.³ A61K *31/47*; C07D *217/04, 217/06*
U.S. Cl. 424—258 19 Claims

1. A compound having the structural formula



wherein R_1, R_2, R_3, R_4 and R_5 may be the same or different and are hydroxy, straight or branched-chain alkoxy of from 1 to 5 carbon atoms, phenoxy, benzyloxy, two adjacent groups may be methylenedioxy, or hydrogen provided R_4 and R_5 are not simultaneously hydrogen; R_6 is hydrogen, straight or branched-chain alkyl of from 1 to 5 carbon atoms, straight or branched-chain alkenyl of from 2 to 5 carbon atoms, cycloalkylalkyl of from 4 to 7 carbon atoms, alkoxy carbonyl of from 2 to 6 carbon atoms, aralkyl of from 7 to 11 carbon atoms, or acyl which is derived from an aliphatic, araliphatic or aromatic carboxylic acid of from 1 to 11 carbon atoms; and the pharmaceutically acceptable salts thereof; excluding 5,6,6a,7-tetrahydro-1-hydroxy-2,9,10-trimethoxy-5-methyl-4H-dibenz-(de,g)isoquinoline and 5,6,6a,7-tetrahydro-1,2,9,10-tetramethoxy-5-methyl-4H-dibenz(de,g)isoquinoline.

13. A pharmaceutical composition useful for treating diseases of the central nervous system in a mammal consisting essentially of a compound having the structural formula:



wherein R_1, R_2, R_3, R_4 and R_5 may be the same or different and are hydroxy, straight or branched-chain alkoxy of from 1 to 5 carbon atoms, phenoxy, benzyloxy, two adjacent groups may be methylenedioxy, or hydrogen provided R_4 and R_5 are not simultaneously hydrogen; R_6 is hydrogen, straight or branched-chain alkyl of from 1 to 5 carbon atoms, straight or branched-chain alkenyl of from 2 to 5 carbon atoms, cycloalkylalkyl of from 4 to 7 carbon atoms, alkoxy carbonyl of from 2 to 6 carbon atoms, aralkyl of from 7 to 11 carbon atoms, or acyl which is derived from an aliphatic, araliphatic or aromatic carboxylic acid of from 1 to 11 carbon atoms; and the pharmaceutically acceptable salts thereof; excluding 5,6,6a,7-tetrahydro-1-hydroxy-2,9,10-trimethoxy-5-methyl-4H-dibenz-(de,g)isoquinoline and 5,6,6a,7-tetrahydro-1,2,9,10-tetramethoxy-5-methyl-4H-dibenz(de,g)isoquinoline or mixtures thereof in an effective amount for treating said diseases in combination with a pharmaceutically acceptable carrier.

4,425,351

THERAPEUTICALLY USEFUL OXYGEN DERIVATIVES OF 3,7A-DIAZACYCLOHEPTA[j,k]FLUORENES

Jean Bertin, Clamart, and Jonathan R. Frost, Cachan, both of France, assignors to Synthelabo, Paris, France

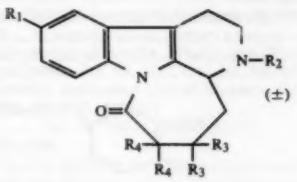
Filed Dec. 2, 1982, Ser. No. 446,358

Claims priority, application France, Dec. 3, 1981, 81 22642

Int. Cl.[3] **A61K** *31/55;* **C07D** *471/14*

U.S. Cl. 424—262 **8 Claims**

1. A compound of the formula:



wherein R_1 represents a hydrogen or chlorine atom or a methoxy radical, R_2 represents a hydrogen atom or the methyl or benzyl radical, and R_3 and R_4 represent hydrogen atoms, or R_3 represents the methyl radical and R_4 represents a hydrogen atom, or R_3 represents a hydrogen atom and R_4 represents the methyl radical, excluding such a compound wherein R_1, R_3 and R_4 each represent a hydrogen atom simultaneously, and its pharmacologically-acceptable acid addition salts.

8. A method for the treatment of vigilance disorders, in particular, for combating the behavioural disorders attributable to cerebral vascular damage or to the cerebral sclerosis encountered in geriatrics, or for the treatment of absences due to cranial traumatisms, for the treatment of metabolic encephalopathies and for the treatment of depressive states, which comprises administering to a patient with such an ailment an amount of a compound of the formula specified in claim 1, or a pharmacologically-acceptable acid addition salt thereof, effective to ameliorate the condition of the patient.

4,425,352

SUBSTITUTED PHENOXYACETATES OF CYCLIC AMINES

Jean-Jacques Godfroid, and Jean Thuillier, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

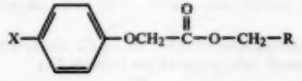
Filed Apr. 21, 1981, Ser. No. 256,168

Claims priority, application France, Apr. 30, 1980, 80 09885

Int. Cl.[3] **C07D** *211/22;* **A61K** *31/445*

U.S. Cl. 424—267 **9 Claims**

1. A compound selected from the group consisting of an amine of the formula



wherein X is selected from the group consisting of chlorine, fluorine and $—CF_3$ and R is a piperidine with the nitrogen atom being in the 2- or 3-position with respect to the $—CH_2—$ group and being optionally substituted on the nitrogen atom with lower alkyl or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

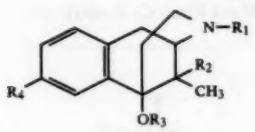
4,425,353
ANALGESIC 5-OXYGENATED-6,7-BENZOMORPHAN DERIVATIVES

Antony M. Akkerman, Amsterdam; Hermanus C. C. K. van Bakel, Montfoort, and Roelof C. K. Smit, Maarssen, all of Netherlands, assignors to ACF Chemiefarma NV, Maarssen, Netherlands

Continuation-in-part of Ser. No. 198,512, Oct. 20, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,799
Claims priority, application Netherlands, Oct. 23, 1979, 7907800

Int. Cl.³ A61K *31/445*; C07O *221/26*
U.S. Cl. 424—267 23 Claims

1. A compound of formula I



(I)

wherein

R_1 is hydroxy and/or C_{1-6} alkoxy substituted C_{2-6} alkyl; optionally hydroxy and/or C_{1-6} alkoxy substituted C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-6} cycloalkyl, or C_{3-6} cycloalkyl(C_{1-6})alkyl; C_{3-6} alkenyloxy(C_{2-6})alkyl, phen(C_{1-6})alkyl, phen(C_{2-6})hydroxyalkyl, phen(C_{3-6})alkenyl, or tetrahydrofuryl(C_{1-6})alkyl; or optionally C_{1-6} alkyl substituted furyl(C_{1-6})alkyl or isoxazolyl(C_{1-6})alkyl,

R_2 is hydrogen or methyl,

R_3 is hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, C_{3-6} alkynyl phen(C_{1-6})alkyl, C_{2-6} hydroxyalkyl, or C_{1-6} alkoxy(C_{2-6})alkyl and

R_4 is hydrogen, hydroxy, C_{1-6} alkoxy, or C_{3-6} alkenyloxy, where the hydroxy in the compound may be independently acylated with a physiologically hydrolysable ester residue or a pharmaceutically acceptable acid addition salt thereof.

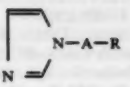
4,425,354
IMIDAZOLE DERIVATIVES AND SALTS THEREOF, THEIR SYNTHESIS, AND INTERMEDIATES, AND PHARMACEUTICAL FORMULATIONS

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 67,379, Aug. 17, 1979, Pat. No. 4,396,771, which is a continuation-in-part of Ser. No. 952,796, Oct. 19, 1978, abandoned, and Ser. No. 936,407, Aug. 24, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 232,729
Claims priority, application United Kingdom, Aug. 26, 1977, 35912/77; Oct. 19, 1977, 43512/77; Feb. 1, 1978, 03983/78; Aug. 8, 1978, 32536/78; Aug. 22, 1978, 34089/78; Nov. 17, 1978, 46157/78

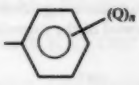
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R 2 Claims

1. A method of treatment or prophylaxis of a thromboembolic disorder in a mammal which comprises orally, rectally, vaginally or parenterally administering to said mammal an effective amount of A 1-substituted-imidazole of the formula:



(I)

in which A is selected from the group consisting of straight or branched, saturated, acyclic hydrocarbon radicals of 1, 2 or 3 carbon atoms, and straight or branched unsaturated acyclic hydrocarbon radicals of 2 or 3 carbon atoms, and R is



wherein n is an integer which is at least 1, and each Q substituent, which when n is greater than 1 may be the same or different, is selected from a saturated hydrocarbon group of from 1 to 4 carbon atoms and an unsaturated hydrocarbon group of from 2 to 4 carbon atoms, with the provisos that

(a) when A is a methylene or ethylidene group, n is at least 2 when each Q is a saturated hydrocarbon group;

(b) when A is a branched propylene or straight propylidene group, n is at least 3 when each Q is a saturated hydrocarbon group; and

(c) when A is unsaturated Q may also be selected from alkoxy- of from 1 to 4 carbon atoms; halo; trihalomethyl; hydroxy; carboxyl; a pharmaceutically acceptable salt of such a carboxyl group; carboalkoxy; carboaryloxy; carboarylalkyloxy; $—NR^6R^7$ or $—CONR^6R^7$; in which R^6 and R^7 may be the same or different and are hydrogen or alkyl of from 1 to 4 carbon atoms, with the further proviso that when n is 1, Q is not a saturated alkyl group; the substituted-imidazole being the free base or a pharmaceutically acceptable acid addition salt thereof.

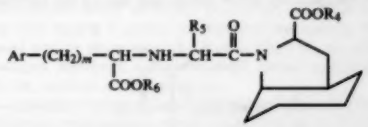
4,425,355
SUBSTITUTED ACYL DERIVATIVES OF CHAIR FORM OF OCTAHYDRO-1H-INDOLE-2-CARBOXYLIC ACIDS

Milton L. Hoefle, and George Bobowski, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 233,940, Feb. 17, 1981, which is a continuation-in-part of Ser. No. 194,307, Oct. 6, 1980, abandoned, which is a continuation-in-part of Ser. No. 137,106, Apr. 2, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 277,794

Int. Cl.³ C07D *209/18, 209/20*; A61K *31/405*
U.S. Cl. 424—274 8 Claims

1. A substituted acyl derivative of octahydro-1H-indole-2-carboxylic acid having the formula



wherein R_4 is hydrogen or lower alkyl; R_5 is hydrogen, lower alkyl or benzyl; R_6 is hydrogen or lower alkyl; Ar is phenyl or phenyl substituted with 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, lower alkyl, lower alkoxy, hydroxy or amino; and m is 0 to 3; wherein lower alkyl and lower alkoxy contain 1 to 4 straight or branched carbon atoms and the pharmaceutically acceptable salts thereof.

4,425,356
LANKACIDIN DERIVATIVES USED IN SWINE HUSBANDRY

Noriaki Narukawa; Keinosuke Takeda, both of Fukuchiyama, and Toshiyuki Yamazaki, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

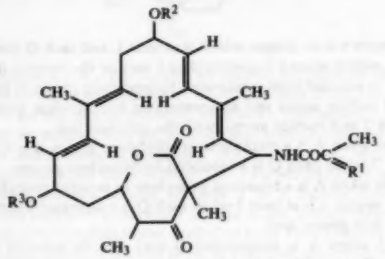
Filed Nov. 24, 1981, Ser. No. 324,635

Claims priority, application Japan, Nov. 29, 1980, 55-168979; Jul. 3, 1981, 56-104583

Int. Cl.³ A61K *31/365;* **C07D** *309/30*

U.S. Cl. 424—279 **10 Claims**

1. A method for prophylaxis or treatment of swine dysentery or for increase of swine productivity, which comprises administering to swine, as an active ingredient, an effective amount of at least one compound of the formula:



wherein R^1 is =O or

and R^2 and R^3 are each hydrogen, a C_1–C_7 fatty acid residue which is unsubstituted or substituted with phenyl on the terminal carbon atom thereof, benzoyl or nicotinoyl.

4,425,357
ACYL ANILINES EXERTING A FUNGICIDAL ACTION

Enrico Bosone, Milan; Giovanni Camaggi, Lodi, both of Italy; Lambertus de Vries, Hilversum, Netherlands; Carlo Garavaglia, Cuggiono, Italy; Luigi Garlaschelli, Pavia, Italy; Franco Gozzo, San Donato Milanese, Italy; Jan C. Overeem, Scherpenzeel, Netherlands, and Simone Lorusso, San Giuliano Milanese, Italy, assignors to Montedison S.p.A., Milan, Italy

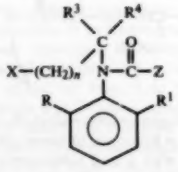
Division of Ser. No. 8,584, Feb. 1, 1979, Pat. No. 4,291,049. This application May 8, 1981, Ser. No. 261,963

Claims priority, application Italy, Feb. 2, 1978, 19896 A/78; Jul. 4, 1978, 25295 A/78

Int. Cl.³ C07C *103/22, 103/76;* **A01N** *37/22*

U.S. Cl. 424—278 **14 Claims**

1. A fungicidally active compound having the formula:

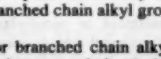


in which

R and R^1, the same or different, are H; CH_3; C_2H_5; n—C_3—H_7; —CH_2—CH=CH_2; —CH=CH—CH_3;

R^3 and R^4, the same or different, are H; C_1–C_3 alkyl; halomethyl; alkoxymethyl; Cl; F; CN; O-alkyl; S-alkyl; or together are (CH_2=);

X is



in which R^9 is C_1–C_3-alkyl; CN; —$CH(OR^5)_2$ in which R^5 is C_1–C_3 alkyl or alkylidene;

in which R^6 and R^7 are C_1–C_3 alkyl;

n is 0 or 1;

Z is

in which R^1 is H; CH_3; or

in which R^8 is CH_3, alkoxymethyl, chloromethyl or O-alkyl;

m is 1 or 2; and

Y is alkynyl C_2–C_8; phenyl; phenyl substituted by C_1–C_3 alkoxy, or phenyl acetyl.

4,425,358
13-THIA-PROSTACYCLINE DERIVATIVES

Csaba Szantay; Lajos Novak, both of Budapest; Jozsef Aszodi, Göd-felso; Vilmos Simonidesz, Budapest; Geza Galambos, Budapest; Gabor Kovacs, Budapest; Sandor Virag, Budapest; Istvan Stadler, Budapest, and Peter Kormoczy, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

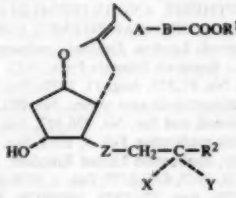
Filed Apr. 21, 1982, Ser. No. 370,503

Claims priority, application Hungary, Apr. 22, 1981, 1035

Int. Cl.³ A61K *31/557;* **C07D** *307/935*

U.S. Cl. 424—285 **11 Claims**

1. An optically active or racemic 13-thia-prostacycline of the Formula I



wherein

R^1 is hydrogen, a pharmaceutically acceptable cation or a straight or branched chain alkyl group having 1–5 carbon atoms;

R^2 is straight or branched chain alkyl having 4–9 carbon atoms or is phenoxymethyl substituted by a halo or a trifluoromethyl substituent: —A—B— is —CH_2—CH_2—, —CH=CH— of Z- or E-configuration or —C≡C;

one of the symbols X and Y is hydrogen, methyl or ethyl and the other is hydroxy, tetrahydropyranyloxy, 1-ethoxyethoxy or trialkylsilyloxy; or

X and Y together form a —O—CH_2—CH_2—O— group; and Z is a sulfur atom or a —SO— group.

7. A method of treatment for blood platelet aggregation inhibiting effect which comprises administering to a susceptible subject an effective amount of a compound as defined in claim 1.

4,425,359

FLUORO-PROSTAGLANDINS AND PROCESS FOR THEIR PREPARATION

Renato Pellegata, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

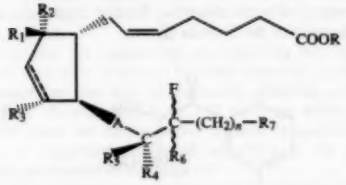
Division of Ser. No. 9,098, Feb. 2, 1979, Pat. No. 4,320,143, which is a continuation of Ser. No. 833,999, Sep. 16, 1977, abandoned, which is a division of Ser. No. 779,632, Mar. 21, 1977, abandoned, which is a continuation of Ser. No. 667,261, Mar. 15, 1976, abandoned. This application Aug. 14, 1981, Ser. No. 302,079

Claims priority, application Italy, Mar. 12, 1975, 21493 A/75

Int. Cl.³ C07C *177/00*; A01K *31/557*

U.S. Cl. 424—305 **12 Claims**

1. An optically active or racemic compound of the formula:



wherein:

R is a member selected from the group consisting of hydrogen, a C_1–C_{12} alkyl group and a cation of a pharmaceutically acceptable base;

the symbol ⋯ represents a single or a double bond, wherein, when the symbol ⋯ is a double bond, R_3 is a hydrogen atom and R_1 and R_2 together form an oxo group, while, when the symbol ⋯ is a single bond, R_3 is hydroxy, one of R_1 and R_2 is hydrogen and the other is hydroxy or an alkanoyloxy group containing up to 6 carbon atoms, a benzoyloxy or a p-phenylbenzoyloxy group or R_1 and R_2, taken together, form an oxo group,

A is trans—CH=CH—;

one of R_4 and R_5 is hydroxy and the other is hydrogen;

R_6 is a member selected from the group consisting of hydrogen, methyl and fluorine;

n is zero, or an integer of 1 to 6; and

R_7 is cycloalkyl containing 3 to 7 ring carbon atoms.

4,425,360

PHARMACOLOGICALLY ACTIVE NOVEL O-SUBSTITUTED PYRUVIC ACID OXIMES

Hans P. Wolff, Hirschberg-Grossachsen; Ruth Heerdt, Mannheim, both of Fed. Rep. of Germany; Manfred Hübner, deceased, late of Ludwigshafen, Fed. Rep. of Germany (by Dietmar Hübner, legal representative); Hans Kühnle, Weinheim, and Felix H. Schmidt, Mannheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

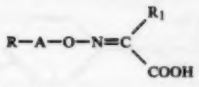
Filed Sep. 8, 1981, Ser. No. 300,076

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036281

Int. Cl.³ A61K *31/15*; C07C *131/00*

U.S. Cl. 424—309 **10 Claims**

1. A pyruvic acid oxime of the formula



wherein

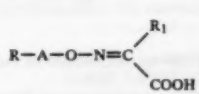
R is a hydrogen atom, or a C_3–C_8 cycloalkyl, methoxy, cinnamyloxy, phenylamino, phenyl-N-methylamino or phenylthio radical, or an aryl or aryloxy radical of which the aryl moiety is phenyl or naphthyl and can be substituted one or more times by C_1–C_6 alkyl, C_1–C_6 alkoxy, halogen, hydroxyl, trifluoromethyl, amino, acetylamino, nitrile, nitro or methylenedioxy,

A is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing 2 to 8 carbon atoms, which can be substituted by a halogen or hydroxyl-group, and

R_1 is a hydrogen atom, a C_1–C_6 alkyl radical which can be substituted one or two times by halogen, hydroxyl or phenyl,

with the proviso that R—A— is not a saturated alkyl radical with 2–4 C-atoms, or a physiologically compatible salt, carboxylic acid C_7–C_6-alkyl esters or amide, mono- or dialkylamide, the alkyl groups having 1 to 6 carbon atoms, and carboxy alkylamide of naturally occurring amino acids thereof.

9. A method of lowering the blood sugar level of a patient comprising administering to such patient a hypoglycaemically active amount of a pyruvic acid oxime of the formula



wherein

R is a hydrogen atom, or a C_3–C_8 cycloalkyl, methoxy, cinnamyloxy, phenylamino, phenyl-N-methylamino or phenylthio radical, or an aryl or aryloxy radical of which the aryl moiety is phenyl or naphthyl and can be substituted one or more times by C_1–C_6 alkyl, C_1–C_6 alkoxy, halogen, hydroxyl, trifluoromethyl, amino, acetylamino, nitrile, nitro or methylenedioxy,

A is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon chain containing up to 8 carbon atoms, which can be substituted by a halogen or hydroxyl-group, and

R_1 is a hydrogen atom, C_1–C_6 alkyl radical which can be substituted one or two times by halogen, hydroxyl or phenyl,

with the proviso that R—A— is not a methyl or ethyl or benzyl radical,

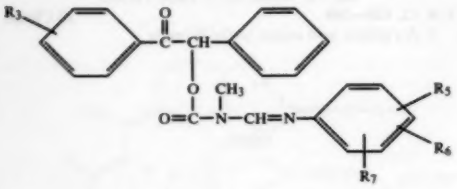
or a physiologically compatible salt, carboxylic acid C_1–C_6 alkyl ester or amide, mono- or dialkylamide, the alkyl groups having 1–6 carbon atoms and carboxy alkylamide of naturally occurring aminoacids thereof.

4,425,361
FORMAMIDO-CARBAMATES AND THEIR USE FOR COMBATING PESTS

Dieter Lohmann, Münchenstein; Christian d'Hondt, Riehen, and Guenter Rist, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,488
Claims priority, application Switzerland, Nov. 27, 1980, 8807/80; Sep. 25, 1981, 6204/81
Int. Cl.³ A01N 37/10; C07C 125/065
U.S. Cl. 424—309 13 Claims

1. A compound of the formula:



wherein

R_3 is hydrogen, acryloyloxy, methacryloyloxy, acrylamido or methacrylamido; and

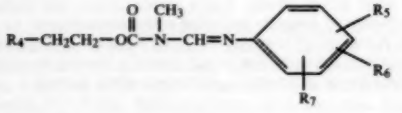
each of R_5, R_6, and R_7, independently of the others, is hydrogen, halo or alkyl of 1 to 4 carbon atoms.

5. A pesticidal composition which contains as active ingredient a compound according to claim 1.

6. A method of combating pests on animals and plants, which method comprises applying thereto or to the locus thereof an effective amount of a compound according to claim 1.

7. A method according to claim 6 for combating insects, and members of the order Acarina.

8. A compound of the formula:



wherein

R_4 is acryloyloxy, methacryloyloxy, acrylamido or methacrylamido; and

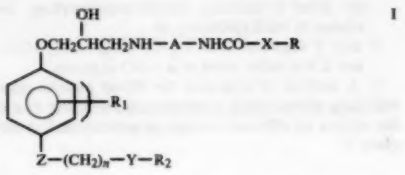
each of R_5, R_6 and R_7, independently of the others, is hydrogen, halo or alkyl of 1 to 4 carbon atoms.

4,425,362
3-AMINOPROPOXYPHENYL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Richard Berthold, Bottmingen, Switzerland, and William J. Louis, Kew, Australia, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 4, 1981, Ser. No. 318,292
Claims priority, application Switzerland, Nov. 6, 1980, 8249/80; Dec. 18, 1980, 9347/80; Jun. 19, 1981, 4073/81; Jun. 19, 1981, 4074/81
Int. Cl.³ A61K 31/17, 31/275; C07C 121/80, 127/19
U.S. Cl. 424—322 11 Claims

1. A compound of formula I



I

wherein

R is alkyl, alkenyl, cycloalkyl, cycloalkylalkyl or optionally substituted aryl, aralkyl or aralkenyl,

R_1 is hydrogen or a substituent,

R_2 is hydrogen or has the significance indicated above for R,

A is alkylene,

X is imino,

Y is an oxygen or a sulfur atom and

either Z is an oxygen atom and n is 2 or 3

or Z is a bond and n is 1, 2 or 3,

or a physiologically acceptable hydrolyzable derivative thereof having the hydroxy group in the 2 position of the 3-aminopropoxy side chain in esterified form,

or a pharmaceutically acceptable salt form thereof.

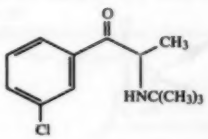
10. A method of treating coronary diseases, conditions associated with sympathetic overstimulation, myocardial infarction, hypertension, migraine, glaucoma, thyreotoxicosis or heart rhythm disorders, which comprises administering to an animal in need of such treatment a therapeutically effective amount of a compound of claim 1.

4,425,363
TREATMENT OF TARDIVE DYSKINESIA IN MAMMALS

Warren C. Stern, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 263,718, May 14, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,118
Int. Cl.³ A61K 31/135
U.S. Cl. 424—330 10 Claims

1. A method of treating Tardive Dyskinesia in a human having Tardive Dyskinesia which comprises administering to said human an effective non-toxic Tardive Dyskinesia amount of a compound of the formula (I)



(I)

or a pharmaceutically acceptable and acid addition salt thereof.

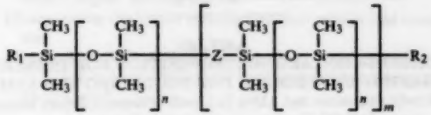
4,425,364
COMPOSITIONS CONTAINING AN ORGANO-SILICON COMPOUND

Guy Vanlerberghe, Commune de Villevaude, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 918,963, Jun. 23, 1978, abandoned, which is a continuation of Ser. No. 763,699, Jan. 28, 1977, abandoned. This application Oct. 10, 1979, Ser. No. 83,515
Claims priority, application France, Feb. 2, 1976, 76 02787
Int. Cl.³ A61K 47/00, 31/695, 31/00
U.S. Cl. 424—358 24 Claims

1. In a cosmetic or pharmaceutical composition containing an oily phase, the improvement comprising said oily phase

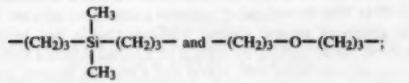
comprising at least one organo-silicon compound having the formula



wherein

R_1 and R_2 each independently represent a saturated linear alkyl containing 8–16 carbon atoms;

Z represents a bivalent radical selected from



m and n each equal 0 or 1;

said compound being present in an amount ranging from 1 to 100 percent by weight relative to the total weight of said composition.

4,425,365

PROCESS FOR AUGMENTING OR ENHANCING THE RASPBERRY AROMA OR TASTE OF A FOODSTUFF OR CHEWING GUM USING A MIXTURE OF KETONES

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Robin K. Wolff, Point Pleasant; Richard M. Boden, Ocean, and Takao Yoshida, West Long Branch, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 396,485, Jul. 8, 1982, which is a continuation-in-part of Ser. No. 362,237, Mar. 26, 1982. This application May 20, 1983, Ser. No. 496,664

Int. Cl.³ A23L *1/235*

U.S. Cl. 426—3 **1 Claim**

1. A process for augmenting or enhancing the raspberry aroma or taste of a raspberry flavored foodstuff or chewing gum comprising the step of intimately admixing with said foodstuff or chewing gum from 0.02 parts per million up to about 300 parts per million based on total composition of a mixture of compounds prepared according to the process consisting essentially of the steps of:

1. reacting alpha pinene with an equimolar mixture of carbon monoxide and hydrogen at a pressure of 4,000 psig and a temperature in the range of 200°–220° C. whereby a mixture of aldehydes is formed;
2. distilling the mixture of aldehydes at a vapor temperature in the range of from 85° C. up to 93° C. and a pressure of from 3 mm/Hg. up to 4 mm/Hg., thereby recovering a mixture of aldehydes;
3. reacting the resulting mixture of aldehydes with methyl ethyl ketone at a temperature of about 45° C. thereby forming a mixture of ketones; and
4. distilling the resulting mixture of ketones at a vapor temperature in the range of from 69° C. up to 89° C. and a pressure in the range of from 1.4 up to 1.8 mm/Hg. thereby recovering a mixture of ketones,

the reaction of alpha pinene with carbon monoxide and hydrogen taking place in the presence of a cobalt octacarbonyl catalyst.

4,425,366

PRODUCTION OF YOGURT

Tomaso Sozzi, Lausanne; Marcel E. A. Buhler, Tolochenaz, and Jaroslav Dasek, Yverdon, all of Switzerland, assignors to Societe d'Assistance Techniques pour Produits Nestle S.A., Lausanne, Switzerland

Filed Mar. 10, 1982, Ser. No. 356,810

Claims priority, application Switzerland, Dec. 16, 1981, 8019/81

Int. Cl.³ A23C *9/12*; C12N *1/20*; C12R *1/225, 1/46*

U.S. Cl. 426—43 **5 Claims**

1. A yogurt having a long storage life comprising:

(a) 10 to 20% by weight of dry matter of animal and/or vegetable milk;

(b) from about 10^5 to 10^8 organisms per cm^3 of a *Lactobacillus bulgaricus* strain having low protein activity selected from the group consisting of *Lactobacillus bulgaricus* CNCM I-179, I-180 and I-181; and

(c) 10^7 to 10^{10} organisms per cm^3 of *Streptococcus thermophilus.*

4,425,367

METHOD OF PRODUCING THERMALLY PROCESSED EGG PRODUCTS

Daniel Berkowitz, Wellesley; Alan B. Bennett, North Reading; John L. Secrist, Medfield, all of Mass., and Debra A. Milette, Oakland, R.I., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 16, 1982, Ser. No. 419,109

Int. Cl.³ A23L *1/32*

U.S. Cl. 426—89 **10 Claims**

1. A method of producing thermally processed, shelf-stable, egg products selected from the group consisting of scrambled eggs and omelets which are texturally acceptable which comprises in sequence the steps of:

(a) Forming a dispersion of water and microcrystalline cellulose, said microcrystalline cellulose present in amounts effective to eliminate rubberiness;

(b) Blending the dispersion of water and microcrystalline cellulose with an egg product mixture consisting substantially of raw eggs;

(c) Cooking the resulting mixture of step (b) to form an egg product;

(d) Packing the egg product in a container;

(e) Hermetically sealing the container containing the egg product; and

(f) Heating the hermetically sealed container for sufficient time to sterilize the contents.

4,425,368

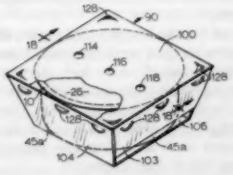
FOOD HEATING CONTAINER

James D. Watkins, Minneapolis, Minn., assignor to Golden Valley Foods Inc., Prairie, Minn.

Continuation-in-part of Ser. No. 283,145, Jul. 13, 1981, which is a continuation of Ser. No. 33,972, Apr. 27, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 311,916

Int. Cl.³ B65D *81/34*

U.S. Cl. 426—107 **9 Claims**



1. A package of cold food heatable in a conventional micro-

wave oven directly from a refrigerated or frozen condition with an improved steam-venting capability and improved uniformity of temperature, said package of food comprising:

a sealed package including a disposable container comprising two main wall members, including one wall member comprising a cover formed from sheet material and another wall member comprising a dish body having a bottom wall and an internally rib-free, upwardly-directed peripheral sidewall at the outer periphery of said bottom wall with an upper edge defining an upwardly-open wide mouth;

said cover being secured to said sidewall so as to close said mouth and provide a sealed cavity within said container;

said dish body bottom wall having a centrally-disposed, upwardly-extending, upwardly-tapering hollow core positioned thereon and projecting vertically within said container;

said core comprising a finger-shaped member extending betwen said bottom wall and said cover and having a closed upper end positioned in proximity to said cover;

said core including surface means thereon within said sealed cavity providing a perimetrically-extending wall having a plurality of angularly-neighboring ribs extending longitudinally therealong;

said core being perimetrically surrounded by a body of cold food;

said body of cold food in said sealed cavity containing water in liquid or frozen form, being in the range of about 40° F. and about 0° F. when said package is in said refrigerated or frozen condition, filling said sealed cavity at least to a substantial depth within which said food is disposed for contact with said ribs of said core and with said rib-free sidewall, and existing as a unitary entity without partitionment into a multiplicity of unconnected entities;

said core wall and cover being substantially transmissive of microwave oven microwave energy for functioning in use as a microwave influx passage for entry of microwave energy into said food within said container;

said core including said ribs thereof being structured and arranged for functioning during microwave heating of said food as a guide means for directing the flow of fluid portions of said food in an upward direction in the vicinity of said core, whereby said core including said ribs thereof contributes to the distribution of heat in said container during microwave heating of said food in said container in a microwave oven by assisting in fluid convection and the absence of ribs on said sidewall within said cavity cooperates with the presence of said ribs on said core to balance microwave heating of said food throughout said cavity and provide more uniform heating of said food than would a similar package having ribs provided on its peripheral sidewall within its cavity;

said package further including a carton having wall panel means providing an enclosed space having a larger volume than that occupied by the food-containing covered dish;

the food-containing covered dish being disposed within said carton, both for while said food is in said refrigerated or frozen condition and for microwave oven heating of the food;

said carton wall panel means including a top wall panel disposed in overlying proximity to said cover and having at least one aperture therethrough designated to provide a steam vent;

said cover, at least in a respective region directly in vertical alignment with each such designated steam vent aperture being constituted of easily fork-pierced material so that just prior to placing the entire package of cold food in a microwave oven for heating, the consumer may pierce a hole through each such region of the cover by inserting a sharp object such as a fork tine through the respective designated steam vent aperture;

said carton wall panel means further including at least one steam vent opening from said enclosed space, this at least one steam vent opening not being associated in direct vertical alignment with any said easily fork-pierced region of the cover, and this at least one steam vent opening being constructed and arranged to permit the escape of steam from said enclosed space.

4,425,369

CHEESE-CONTAINING COMPOSITION FOR DESSERT MAKING AND PROCESS FOR PRODUCING THE SAME

Kenshi Sakamoto, and Akira Doi, both of Sennan, Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

Filed Aug. 31, 1981, Ser. No. 297,973

Claims priority, application Japan, Sep. 1, 1980, 55-121425

Int. Cl.³ A23C *19/09, 19/093*

U.S. Cl. 426—582 **7 Claims**

1. A cheese-containing composition in the form of a homogenized oil-in-water type emulsion which consists essentially of (a) 10 to 70% by weight of a cheese component selected from the group of natural cheese, artificial cheese and mixtures thereof, (b) 30 to 90% by weight of a liquid selected from the group of milk, skim milk, water and a mixture thereof, (c) 0.1 to 3% by weight of an emulsifier selected from the group of lecithin, a glycerin fatty acid ester, a sucrose fatty acid ester, a propylene glycol fatty acid ester, a sorbitan fatty acid ester, a polyglycerol fatty acid ester, a polyoxyethylene sorbitan fatty acid ester and a mixture thereof and (d) from 0 to 40% by weight of a fat ingredient, all the percentages being based on the composition.

4,425,370

PROCESS FOR MAKING MARGARINE-TYPE FOOD PRODUCT

Frederic A. Graves, Ham Lake, Minn., assignor to Land O'-Lakes, Inc., Minneapolis, Minn.

Filed Jan. 15, 1982, Ser. No. 339,378

Int. Cl.³ A23D *3/00, 3/02*

U.S. Cl. 426—603 **24 Claims**

12. A process for the production of a margarine-type food product, the process comprising:

blending a milk or a milk-derived fluid having a fat content range of 0 to 8% by weight with a fluid hydrogenated vegetable oil to form a oil mixture with a vegetable oil concentration of at least approximately 38% by weight;

processing the oil mixture through a homogenizer to obtain a vegetable oil globule size range substantially similar to natural size range of butterfat globules in a dairy cream;

blending the dairy cream containing butterfat globules with the oil mixture after processing through the homogenizer forming a cream/oil mixture; and

processing the cream/oil mixture through a butter churn.

4,425,371

MARGARINE FAT BLEND

Wilhelm Stratmann, Weinheim, Fed. Rep. of Germany; Leo F. Vermaas, Maassluis, and Willem Dijkshoorn, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,353

Claims priority, application United Kingdom, Jun. 15, 1981, 8118354

Int. Cl.³ A23D *3/00, 5/00*

U.S. Cl. 426—603 **16 Claims**

1. A process for producing a margarine fat, comprising:

(1) randomly interesterifying a mixture containing 45–75 wt% of an oil (i) in which at least 20% of the fatty acid residues consist of linoleic acid and 25–55 wt% of an oil or fat (ii) in which at least 80% of the fatty acid residues in saturated and has a chain length of at least 16 carbon atoms;

(2) fractionating the resulting interesterified mixture to separate an olein having the following solid fat content:

N_{10}=25–53

N_{20}=8–28
N_{30}=1–6
N_{35}=0–4,
from a higher melting stearin;

(3) separating the higher melting stearin to obtain said olein; and

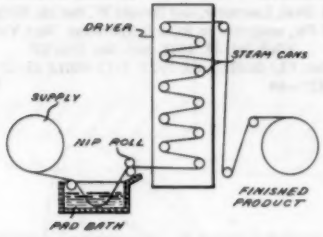
(4) mixing 50–90% of the olein with 10–50 wt% of an oil (iii) in which at least 40% of the fatty acid residues consist of linoleic acid.

4,425,372

PROCESS FOR MAKING ABSORBENT BIOACTIVE WETTABLE MEDICAL FABRIC

A. Frank Baldwin, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

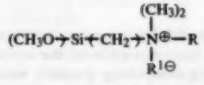
Continuation-in-part of Ser. No. 310,414, Oct. 9, 1981. This application Jul. 20, 1982, Ser. No. 400,223
Int. Cl.³ A01N *1/02*
U.S. Cl. 427—2 **13 Claims**



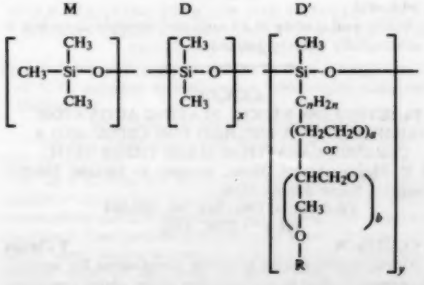
1. A process for making an absorbent, bioactive wettable medical fabric comprising the steps of:

(a) applying to a non-woven cellulosic-containing substrate

(1) a bioactive amount of a bioactive silyl quaternary amine compounds have the formula:



wherein R is an alkyl of 11 to 22 carbon atoms and R^1 is a bromine or chlorine; and (2) a wettable hydrophilic coupling amount of an organosilicone terpolymer of the formula:



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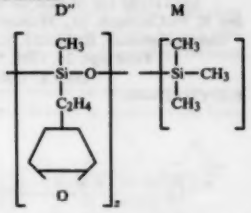


wherein R is hydrogen or methyl, the sum of a+b is in the range of 5 to 200, x is 10 to 50,000, y is 1 to x and z is 1 to 0.05x provided that the sum of y+z is ≦0.75x; and

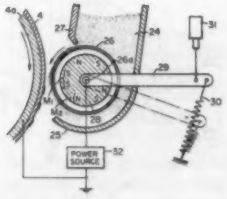
(b) heating the thus coated substrate from step (a) to dry the substrate and fix the microbiocide and hydrophilic coupling agent to said substrate, thereby producing bacteriocidal substantially non-leachable and non-flammable finish which is substantive on said substrate.

4,425,373

METHOD FOR IMAGE DEVELOPMENT BY APPLICATION OF ALTERNATING BIAS

Nagao Hosono, Chofu; Tohru Takahashi; Junichiro Kanbe, both of Tokyo; Tsutomu Toyono, Ohizumimachi; Shunji Nakamura, Kawasaki, and Yasuyuki Tamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,414, Mar. 5, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 275,402
Claims priority, application Japan, Mar. 8, 1979, 54-26902
Int. Cl.³ B05D *1/04*
U.S. Cl. 427—14.1 **9 Claims**



1. A method for development, which comprises:

(a) oppositely arranging a moving latent image holding member and a developer carrying member having a non-conductive magnetic developer coated on the surface thereof, said image holding member and said developer carrying member being mutually spaced apart at an image developing section by an amount greater than the thickness of a layer of the developer coated on the surface of said developer carrying member;

(b) causing the spaced-apart, non-conductive developer to perform reciprocating motion between an image portion and a non-image portion of said latent image holding member and said developer carrying member at least in the region of closest approach between the latent image holding member and the developer carrying member in response to application of an alternating electric field across said latent image holding member and said developer carrying member; and

(c) moving the surface of the developer layer carried on said developer carrying member at the developing section in substantially the same direction and at substantially the same speed as the latent image holding member.

4,425,374

METHOD OF MAKING ELECTRICAL CABLE

Joe R. McCutcheon, Sr., Malvern, Ark., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 26, 1982, Ser. No. 371,602
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 9 Claims

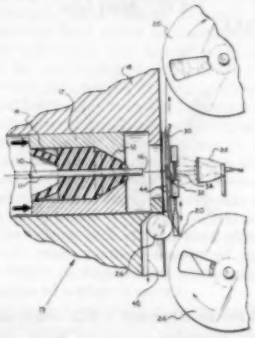
1. In a method of forming insulated electrical cable comprising surrounding a conductor with a thermosetting material in a molten state, heating said cable to thereby cure said thermosetting material to a solid state and cooling said cable after curing of said thermosetting material, the improvement comprising reheating said cable after said cooling thereof to a temperature below the melting point of said cured thermosetting material for a time sufficient to thereby prevent shrink back of said cured thermosetting material from said conductor.

4,425,375

END CAPPING AN OPTICAL FIBER

Edward A. Abramson, Newark, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Division of Ser. No. 235,036, Feb. 17, 1981. This application Apr. 25, 1983, Ser. No. 488,623
Int. Cl.³ G02B 5/14, 1/10; B05D 1/18
U.S. Cl. 427—53.1 16 Claims



1. Method for forming a surface with low optical scattering loss at the end of a cut optical fiber comprising: (a) contacting said fiber end to a thin, light-transmissible, hardenable layer supported on a smooth substrate to embed said fiber in said hardenable layer, (b) hardening said layer while said fiber remains embedded in said layer to form a smooth, flat surface at the end of said fiber.

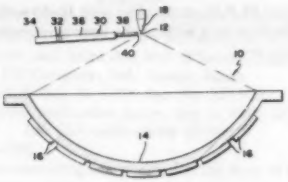
4,425,376

CONTACTLESS PELLET FABRICATION

Mark C. Lee, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 314,702
Int. Cl.³ B05D 3/00, 1/00
U.S. Cl. 427—57 6 Claims

1. A process for coating an object comprising:
applying resonant acoustic energy to a gas-filled area, that establishes a standing wave pattern with at least one pressure well at which there is a pressure gradient with pressure increasing in every direction away from the center of the pressure well;
suspending an object in said pressure well; and



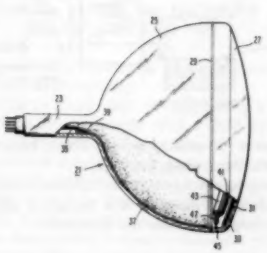
applying a coating to said object, including introducing a multiplicity of fine quantities of coating material to a region containing said object, whereby to allow the pressure around the well to press the fine coating material quantities against the object.

4,425,377

METHOD OF MAKING A CATHODE-RAY TUBE HAVING A CONDUCTIVE INTERNAL COATING EXHIBITING REDUCED ARCING CURRENT

Samuel B. Deal, Lancaster, and Donald W. Bartch, Wrightsville, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 22, 1981, Ser. No. 286,022
Int. Cl.³ B05D 3/02, 7/22, 5/12; H01J 63/02
U.S. Cl. 427—64 7 Claims



1. In a method of fabricating a cathode-ray tube including depositing on at least a portion of the interior surface of an envelope a coating comprising graphite, iron oxide and a silicate binder, baking said coating in air and then evacuating and sealing said envelope, the improvement comprising
(a) including amorphous carbon in said coating in an amount sufficient to be capable of reducing arcing currents passed by said coating during the operation of said cathode-ray tube, and
(b) baking said coating in air until said amorphous carbon is substantially entirely gasified.

4,425,378

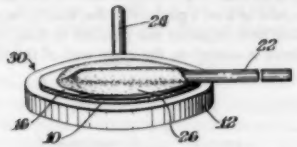
ELECTROLESS NICKEL PLATING ACTIVATOR COMPOSITION A METHOD FOR USING AND A CERAMIC CAPACITOR MADE THEREWITH

John P. Maher, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 6, 1981, Ser. No. 280,044
Int. Cl.³ C23C 3/02
U.S. Cl. 427—79 9 Claims

1. An electroless plating activator composition for sensitizing a ceramic surface to be electroless nickel plated consisting

essentially of palladium, at least half as much silicon as palladium and 1.3 times as much zinc as silicon, all by weight, said palladium, silicon and zinc being homogeneously dispersed in a liquid organic vehicle.

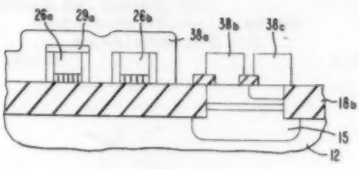


4,425,379

POLYCRYSTALLINE SILICON SCHOTTKY DIODE ARRAY

Madhukar B. Vora, Los Gatos, and Hemraj K. Hingarh, San Jose, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Feb. 11, 1981, Ser. No. 233,348
Int. Cl.³ H01L *29/48*
U.S. Cl. 427—84 **11 Claims**



1. A process for fabricating an array of Schottky diodes comprising:

depositing a layer of a metal-silicide on an underlying dielectric layer;

depositing a layer of polycrystalline silicon on the layer of metal-silicide;

removing selected portions of the layer of polycrystalline silicon and the layer of metal-silicide to thereby create a plurality of electrically isolated regions of polycrystalline silicon on metal-silicide;

forming a layer of dielectric over at least all portions of the metal-silicide layer exposed by the removing step; and

fabricating regions of metal over a selected portion of the polycrystalline silicon, the metal-polycrystalline silicon interface forming a Schottky diode connected between the metal and the metal-silicide.

4,425,380

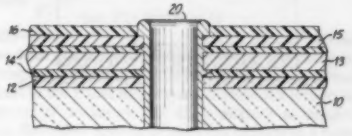
HOLE CLEANING PROCESS FOR PRINTED CIRCUIT BOARDS USING PERMANGANATE AND CAUSTIC TREATING SOLUTIONS

Francis J. Nuzzi, Freeport, and John K. Duffy, Douglaston, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Nov. 19, 1982, Ser. No. 443,160
Int. Cl.³ B05D *5/12, 3/04;* B29C *17/08;* B44C *1/22*
U.S. Cl. 427—97 **26 Claims**

21. In a process for electrolessly depositing metal onto a multilayer circuit board having at least three layers, a top, an intermediate, and a bottom layer, said intermediate layer being comprised of an insulating material and a metal conductor, the circuit board having at least one hole formed therethrough, the interior walls of said hole having a resin smear thereon, wherein prior to said electroless metal deposition, which includes the steps of activating the surface of the board by depositing thereon a solution containing a noble metal, and then electrolessly depositing a metal on the activated surface and holes of the board, the board is subjected to pretreatment comprising the following steps:

contacting the board with an alkaline permanganate treating solution for a time period sufficient to remove resin from the board;



contacting the board with a water soluble compound oxidizable by permanganate for a time period sufficient to reduce the manganese residues deposited on the board to a low oxidation state; and

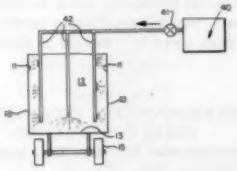
contacting said circuit board with an alkaline hydroxide solution at a temperature between about 40° C. and about 95° C. for a time period sufficient to remove essentially all manganese residues.

4,425,381

BULK CARGO HANDLING METHOD

Myles A. Walsh, 143 North Main St., Cranbury, N.J. 08512

Filed Jan. 12, 1982, Ser. No. 338,844
Int. Cl.³ B05D *7/22, 5/08, 1/36, 1/12*
U.S. Cl. 427—181 **24 Claims**



1. A method for facilitating the discharge of bulk cargos of minerals, agricultural and forestry products, from a storage or shipping container by reducing the coefficient of friction of surfaces of the container, said method comprising:

coating, with a first release agent, only the area of the bulk material around its periphery, adjacent the inner wall of the container, continuously as the bulk material is loaded, to create a peripheral zone of coated bulk material surrounding a larger central zone of uncoated material.

4,425,382

DEVELOPER CARRIER

Syouji Tajima, HigashiKanamachi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,450
Claims priority, application Japan, Oct. 28, 1981, 56-171503
Int. Cl.³ B05D *1/36*
U.S. Cl. 427—203 **8 Claims**

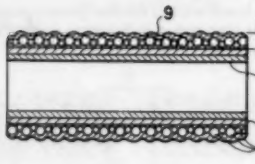
1. A method for manufacturing a developer carrier for use in a device for developing an electrostatic latent image, said method comprising the steps of:

(a) forming a first layer of a first adhesive and substantially insulating material on the surface of a conductive support;

(b) depositing particles of an electrically conductive material on the surface of said first layer before said first material is hardened substantially;

(c) forming a second layer of a second adhesive and substan-

tially insulating material on the particle-deposited surface of said first layer; and



(d) grinding the thus formed structure to have at least some of said particles ground to be exposed at the resulting surface.

4,425,383

PROCESS FOR OXIDATION OF CARRIER PARTICLES

John A. Crestura, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 6, 1982, Ser. No. 395,161
Int. Cl.[3] B05D 7/00
U.S. Cl. 427—216 8 Claims

1. An improved process for treating steel carrier core surfaces which consisting essentially of providing steel carrier core particles, oxidizing in an air stream the surface of the carrier core particles at a temperature of from about 500 degrees Fahrenheit to about 1,000 degrees Fahrenheit, adding water to the air stream prior to accomplishing the oxidation reaction, at a partial pressure of water in excess of 20 millimeters of mercury, thereby resulting in carrier cores having a resistance of from about 10^5 ohm-cm to about 10^{12} ohm-cm.

4,425,384

POLYMER-REINFORCING COMPOSITIONS AND THEIR PREPARATION

Thomas F. Brownscombe, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 27, 1981, Ser. No. 257,834
Int. Cl.[3] B05D 7/00; C08K 3/34, 3/00; B32B 27/08
U.S. Cl. 427—221 8 Claims

1. Method for producing a particulate or filamentary polymer reinforcing mineral composition having a thin layer, averaging about 5–500 Angstrom in thickness, of thermoplastic polymer chemically bonded to its surface by covalent bonding, which comprises:

(a) reacting a silicon-free and heavy metal-free thermoplastic hydrocarbon polymer containing olefinic double bonds with a strong acid, thereby forming protonated double bonds;

(b) contacting said polymer containing protonated double bonds with a particulate or filamentary mineral material which has reactive oxygen atoms at its surface, whereby a covalent bond is established between the mineral surface and the polymer.

4,425,385

METHOD FOR CLEANING AND COATING PIPELINE WALLS

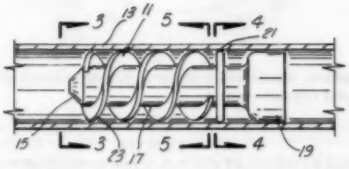
James H. Coulter, Houston, Tex., and David L. Lindsey, Oklahoma City, Okla., assignors to Coulter-Mustang Services Company, Houston, Tex.

Filed Apr. 12, 1982, Ser. No. 367,341
Int. Cl.[3] B05D 7/22, 1/26, 1/40, 1/36
U.S. Cl. 427—238 6 Claims

1. A method for distributing fluid along the interior wall of a pipeline comprising:

placing a quantity of fluid to be distributed at a location in the pipeline;

exerting a force on one side of the quantity of fluid concurrently in an axial and rotational direction in the pipeline so as to cause at least a portion of that fluid to move through a helical path adjacent the pipeline so fluid subjected to that force is coated on the inner wall of the pipeline; and



smoothing the fluid contacted with the inner wall of the pipeline by movement through the helical path by wiping any excessive fluid with an axial wiping force substantially equally applied to the fluid around the inner wall of the pipeline concurrently with the application of axial and rotational force.

4,425,386

MULTI-SHEET ASSEMBLY USING AUTOGENOUS COATING

John C. H. Chang, Naperville, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Filed Jul. 7, 1982, Ser. No. 395,870
Int. Cl.[3] B41M 5/16, 5/22
U.S. Cl. 427—256 20 Claims

12. A method for forming non-coextensive, visible images in a multi-ply mailer form which comprises contacting the top sheet of a multiple mailer form comprising a plurality of sheets in superposed relationship, wherein the top sheet comprises a support bearing a localized autogenous coating comprising an electron acceptor material and microscopic pressure-rupturable capsules containing a chromogenic material on its upper surface, with the printing stylus from an impact printer thereby providing a visible image in said localized, autogenous coating by rupturing said capsules to release said chromogen from said capsules for reaction with said electron acceptor material in said localized autogenous coating without transfer.

4,425,387

METHOD FOR PREPARING SOLID OBJECTS

Werner Graf; Volker Frey, both of Burghausen, and Hans-Gunter Röse, Langenhagen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,162

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1981, 3142419

Int. Cl.³ A21D *4/00*

U.S. Cl. 427—341 10 Claims

1. A process for preparing a coating composition which comprises reacting in an essentially water-free medium, a polysiloxane containing SiOC-bonded monovalent hydrocarbon radicals having from 1 to 6 carbon atoms and having at least 3 silicon atoms per molecule and up to 0.6 weight percent of Si-bonded hydroxyl groups based on the weight of the polysiloxane with boric acid anhydride in the presence of a compound selected from the group consisting of an organic tin compound, titanium tetrabutylate and partial hydrolyzates thereof at a temperature of from 0° to 150° C.

4,425,388

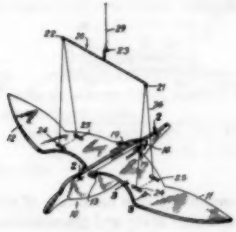
ADJUSTABLE FLIGHT SIMULATING MOBILE DEVICE

Edgar D. Oppenheimer, Jr., Mamaroneck, N.Y., assignor to Bird Mobiles, Inc., Scarsdale, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,933

Int. Cl.³ A63H *3/00, 3/16*

U.S. Cl. 428—16 4 Claims



1. A flight simulating mobile device having the appearance of a bird or like flying creature comprising a rigid body portion having a configuration, in side elevation, in simulation of the side elevation configuration of the creature, a pair of wing support members mounted on said body portion, said support members being mutually spaced apart in the general direction of the longitudinal axis of said body portion, said support members extending generally transversely relative to said body portion and each including a pair of carrier portions projecting beyond each side of said body portion, a bearing element formed on each said carrier portion, the bearing elements on each side of said body portion being in substantial coaxial alignment to define a pivot axis at each side of said body portion, a wing member comprised of resilient material pivotally mounted between the bearing members to each side of said body portion, each said wing member including a spaced pair of bearing receiver portions pivotally engaging a said bearing element, at least one said bearing receiver portion of each said wing being resiliently deflectible toward said other bearing receiver member, the distance between said receiver members exceeding the distance between the bearing members in the undeflected condition of said receiver portions and being less than the distance between said bearing members when said receiver members are biased toward each other.

4,425,389

HEAT-APPLICABLE AND HARDENABLE SEALING COMPOSITIONS AND ITS USE

Wolf-Dietrich Schöllhorn, Grünstadt, and Lothar Hockenberger, Ludwigshafen, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,571

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134151

Int. Cl.³ E06B *3/24*

U.S. Cl. 428—34 7 Claims

7. A process of producing an insulating glass unit comprising arranging two glass panes in a circumferential frame and securing said panes in the frame by spraying therein at a temperature of from about 50° to about 100° C., a mixture as defined in claim **1**, and thereafter heating to cure the mixture at a temperature of about 140° C. to 160° C.

4,425,390

MARKER SLEEVE ASSEMBLY

Pushpkumar D. Changani, Swindom; Donald G. Peacock, Kempsford, and David Roberts, Broom Manor SW, all of England, assignors to Raychem Corporation, Menlo Park, Calif.

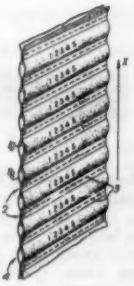
Continuation of Ser. No. 391,034, Jun. 22, 1982, which is a division of Ser. No. 172,889, Jul. 28, 1980, Pat. No. 4,349,404.

This application Apr. 27, 1983, Ser. No. 489,275

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ B32B *7/06, 3/12*

U.S. Cl. 428—43 2 Claims



1. A marker sleeve assembly comprising:

a first sheet and a second sheet of flexible material arranged in face-to-face relationship and having longitudinal axes disposed parallel to one another, said sheets being heat-recoverable primarily along the longitudinal axes of the first and second sheets;

a plurality of spaced transverse seams joining the first and second sheets at prescribed intervals, the transverse seams being arranged perpendicular to the longitudinal axes of the first and second sheets, each pair of adjacent transverse seams defining a marker sleeve which is radially heat-recoverable, the seams being cross-linked to strengthen the seams to withstand radial heat recovery.

4,425,391

BUTTON AND BUTTONHOLE TAPE

Barbara J. Wilson, 14635 Bainbridge, Livonia, Mich. 48154

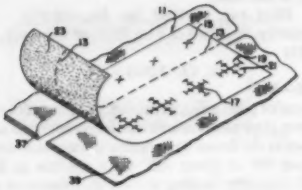
Filed Sep. 14, 1979, Ser. No. 75,698

Int. Cl.³ D05B *3/06*

U.S. Cl. 428—43 3 Claims

1. A tape for locating fasteners on corresponding panels of material comprising a strip having a longitudinal perforation

throughout its length, locating indicia on both sides of said perforation, the indicia on one side corresponding along the length of said tape to the indicia on the other side, coded markings adjacent said locating indicia to indicate alternative spacings between said indicia, and an adhesive on the surface



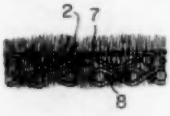
of said tape opposite said indicia and said markings for temporarily adhering said tape to panels of material for locating pairs of fasteners on said panels, wherein the locating indicia on one side of said perforation comprise horizontal or vertical length marks.

4,425,392

NEEDLE PUNCHED PAPERMAKING FELT AND METHOD OF MANUFACTURING THE SAME

Naoyuki Oikawa; Wako Sato, both of Ichikawa, and Osamu Tanaka, Kashiwa, all of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,560
Claims priority, application Japan, Apr. 23, 1981, 56-60686
Int. Cl.³ B32B *5/06, 5/26*; D21F *7/08, 7/12*
U.S. Cl. 428—90 **2 Claims**



1. A needle punched papermaking felt, comprising a plurality of layers of foundation fabrics formed in an endless form by joining the opposite edges of long woven form foundation fabrics or foundation fabrics woven in an endless form, each of said foundation fabrics consisting of synthetic filament yarns, synthetic fiber spun yarns, synthetic fibers-natural fiber blended spun yarns and mixtures thereof, laying over one or both sides of said foundation fabrics batts consisting of synthetic fibers or natural fibers or mixtures thereof, and by felting by a needle punching process to cause the component fibers to be entangled with each other wherein a thin layer of said batts consisting of synthetic fibers, natural fibers or mixtures thereof, is interposed between the adjacent layers of said foundation fabrics and wherein the adjacent layers of said foundation fabrics are characterized by the outermost layer having yarns of relatively high elasticity in a relatively dense construction, and the innermost layer having relatively non-compressible yarns in a relatively coarse construction.

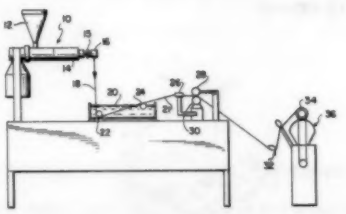
2. The method of manufacturing a needle punched papermaking felt, comprising the steps of placing in a needle punching machine under tension, a plurality of (1) foundation fabrics in a long woven form, the respective opposite edges thereof being joined to form endless fabrics having seams, or a plurality of (2) relatively easily woven foundation fabrics in an endless form, or a plurality of both of said foundation fabrics (1) and said foundation fabrics (2), applying and laying batts consisting of synthetic fibers or natural fibers or mixtures thereof over said foundation fabrics while said foundation fabrics are being advanced in said needle punching machine, and needle punching the combination of said superimposed foundation fabrics and said batts while under tension so that the component fibers are caused to be entangled with each other wherein a thin layer of said batts consisting of synthetic fibers, natural fibers or mixtures thereof, is interposed between said adjacent fabrics, and the method comprises needle punching a first mixed layer of the first one of said foundation fabric and a first thin layer of said batts while said batts are delivered over the surface of said firsrt foundation fabric, interrupting the delivering of said batts, laying the second one of said foundation fabric over said first mixed layer of said first foundation fabric and said first thin layer of batts, delivering a second layer of batts over the surface of said second foundation fabric, needle punching said combination of said first mixed layer and said second foundation fabric and a second thin layer of said batts and repeating said procedure wherein the adjacent layers of said foundation fabrics are characterized by the outermost layer having yarns of relatively high elasticity in a relatively dense construction, and the innermost layer having relatively non-compressible yarns in a relatively coarse construction.

4,425,393

LOW MODULUS, SMALL DIAMETER FIBERS AND PRODUCTS MADE THEREFROM

Joseph C. Benedyk, Highland Park, Ill.; William McGlone, Conifer, Colo., and Homer Amos, Palm Springs, Calif., assignors to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 33,481, Apr. 26, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,885
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—95 **27 Claims**



22. A fabric comprising yarn consisting of polymeric, thermoplastic, monofilament fibers and characterized by:

(a) an elastic modulus of said thermoplastic ranging from 2,000 to 100,000 psi,

(b) a fiber diameter ranging from about 0.5 to 3 mils, and

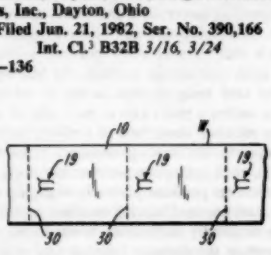
(c) a fiber stiffness parameter less than 8.5×10^{-9} lb-in^2.

4,425,394

WEB OF TAGS AND METHOD OF ATTACHING TAGS

William A. Jenkins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 21, 1982, Ser. No. 390,166
Int. Cl.³ B32B *3/16, 3/24*
U.S. Cl. 428—136 **3 Claims**



1. A web of tags composed of single-ply, printable, paper-like material, the tag including a chadless hole knife-cut pattern having a pair of long cut portions and a relatively short cut

portion joined to the long cut portions in a generally U-shaped arrangement to provide an elongated flap portion having relatively long sides and a relatively short end, the flap portion being hingedly joined to the remainder of the tag by an uncut portion opposite the short end, the flap portion being deflectable about the hinge portion by a tag attacher needle which is wider than the distance between the long cut portions but which is narrower than the distance between the short cut portion and the hinge portion, additional cuts defining an additional flap portion joined to the cut pattern enabling ready insertion of a head of a loop-type fastener, and wherein the short end portion forms adjacent edges of the flap portions.

4,425,395

BASE FABRICS FOR POLYURETHANE-COATED FABRICS, POLYURETHANE-COATED FABRICS AND PROCESSES FOR THEIR PRODUCTION

Isamu Negishi, Ina, and Kazumi Hunyu, Omiya, both of Japan, assignors to Fujikura Rubber Works, Ltd., Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,477

Claims priority, application Japan, Apr. 30, 1981, 56-65564; Apr. 30, 1981, 56-65565; Apr. 30, 1981, 56-65566

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—196 **38 Claims**

1. A process for the production of base fabric for polyurethane-coated fabrics, which comprises partially coating a solution of polyurethane prepolymer containing a cross-linking agent on at least one surface of a water repellent-unfinished fabric at coverage rate of 10 to 30 g/m², drying at a temperature between 70° and 150° C. for 30 seconds to 15 minutes and aging at a temperature between room temperature and 70° C. for less than 48 hours until said polyurethane prepolymer is caused to be under half crosslinked conditions.

4,425,396

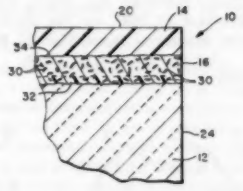
INSULATIVE PANEL

Richard E. Hartman, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 28, 1982, Ser. No. 425,841

Int. Cl.³ B32B *7/04, 3/06*

U.S. Cl. 428—220 **6 Claims**



1. An insulative panel comprising a foam layer of synthetic, organic, polymeric foam, a weathering layer, and a backer layer interposed between said foam layer and said weathering layer, said backer layer being a stereoreticulate material having multiple interstices therein, the said foam material of said foam layer penetrating into and filling the interstices of said backer layer along the interface border portion between said foam layer and said backer layer and partway through the thickness of said backer layer, the interstices of said backer layer adjacent the interface of said weathering layer and said backer layer being free of said foam material of said foam layer whereby a bond is provided between said backer layer and said foam layer and flexibility of said backer layer is retained, said weathering layer being adhered to said backer layer along the interface of said weathering layer with said backer layer.

4. An insulative panel in accordance with claim 1 wherein said foam layer is of polyurethane, said backer layer is of asbestos and said weathering layer is of chlorosulfonated polyethylene.

5. An insulative panel in accordance with claim 4 wherein the thickness of said weathering layer is around 20 mils, the thickness of said backer layer is at least 10 mils and preferably 15 mils and the thickness of said foam layer being at least one inch and preferably two to three and one-half inches.

4,425,397

FLAME AND HEAT RESISTANT ELECTRICAL INSULATING TAPE

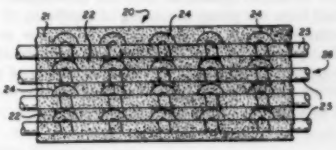
Stephen George, Bronx, N.Y., assignor to Subtex, Inc., Hartsdale, N.Y.

Continuation of Ser. No. 73,362, Sep. 7, 1979, Pat. No. 4,282,284, which is a continuation-in-part of Ser. No. 931,121, Aug. 4, 1978, abandoned. This application Jan. 19, 1981, Ser. No. 225,888

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ B32B *7/00, 17/06*

U.S. Cl. 428—251 **4 Claims**



1. A heat resistant, flexible, refractory, electrical insulating tape comprising:

(a) a porous base fabric of a knitted fiberglass, a woven fiberglass or a non-woven, porous web of fiberglass;

(b) a refractory coating comprising refractory materials and a bonding agent of acrylic latex resin or acrylic latex resin and colloidal silica, said refractory coating formed on the surface and interstices of said fabric by applying said refractory coating to both sides of said fabric, and said refractory materials being capable of fusing with the porous base fabric at elevated temperatures; and

(c) an abrasion resistant polymeric coating formed on the outside surface of said refractory coating.

4,425,398

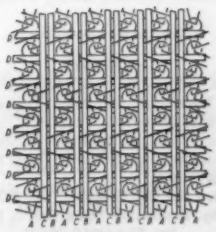
FABRICS FOR USE IN COMPOSITE SHEETING

Charles N. Berczi, Ormskirk, England, assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 12, 1982, Ser. No. 367,478

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—253 **2 Claims**



1. A printers blanket comprising: a rigid warp knitted fabric composed of relatively fine yarn of continuous man-made filaments, closely spaced and relatively coarse inlaid warp

yarns and closely spaced and relatively coarse and textured weft insertion yarns, the inlaid and insertion yarns being also composed of continuous man-made filaments and extending through the knitted structure without interlacing with one another, whereby one face of the fabric is substantially constituted by the inlaid warp and a layer of vulcanized rubber coated on said one face of said knit fabric to provide a smooth surface on said face.

4,425,399

MATS FOR ASPHALT UNDERLAY

James P. Bershas, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 274,969, Jun. 18, 1981, Pat. No. 4,359,546. This application Jun. 23, 1982, Ser. No. 391,208

Int. Cl.³ D04H *1/58*; B32B *27/02*

U.S. Cl. 428—288 **4 Claims**

1. A composition of matter comprising at least one fiber selected from the group consisting of glass fibers, mineral fibers, synthetic resin fibers and natural fibers and the residue formed by removing water from an aqueous composition consisting essentially of a thermoplastic emulsion of carboxylated styrene butadiene latexes, at least one thermoplastic emulsion selected from the group consisting of emulsions of vinyl chloride-ethylene acrylamide terpolymers, styrene acrylics and vinyl acrylics and mixtures thereof and a melamine formaldehyde resin selected from the group consisting of methylated melamine formaldehyde resin and hexamethoxymethyl melamine, and an ammonium salt catalyst.

4,425,400

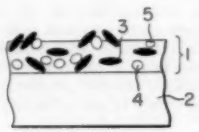
MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Masaaki Fujiyana; Nobuo Tsuji, and Norio Nasu, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 31, 1982, Ser. No. 364,029

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—329 **7 Claims**



1. A magnetic recording medium comprising a magnetic recording layer on the surface of a non-magnetic support, the magnetic recording layer comprising a ferromagnetic substance, 0.5–15 wt % based on the weight of the ferromagnetic substance of an abrasive having a Mohs' hardness of at least 6 and 5–30 wt % based on the weight of the ferromagnetic substance of acicular α-Fe_2O_3 having a length of 1.5 to 0.1 micron.

4,425,401

MAGNETIC RECORDING MEDIA

Tadashi Ido, Yokohama; Hirotaka Yokoyama, Yokosuka; Moriyasu Wada, Ninomiya; Toshihiko Oguchi, Kawasaki; Akio Ishizawa, Tokyo, and Yoshiyasu Koike, Chigasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki City, Japan

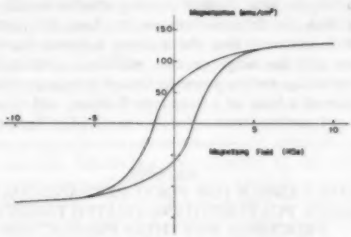
Filed Jun. 30, 1982, Ser. No. 393,789

Claims priority, application Japan, Jul. 2, 1981, 56-102265

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—329 **5 Claims**

1. A magnetic recording medium comprising a substrate and a resinous composition containing magnetic particles of uniaxially-anisotropic hexagonal crystals having particle diameters of from 0.01 to 0.3 μm and coated on said substrate; the ratio of remanent magnetization to saturation magnetization on the magnetization curve for the recording medium, corrected to a



demagnetizing field which is measured in a direction vertical to the surface of the recording medium, ranging from 0.3 to 0.7.

4,425,402

FIBRILLATED POLYMERIC FILMS AS REINFORCEMENT IN MANUFACTURED ARTICLES BASED ON HYDRAULIC BINDERS

Pierpaolo Camprincoli, Terni, Italy, assignor to Montedison S.p.A., Milan, Italy

Filed Feb. 16, 1982, Ser. No. 348,776

Claims priority, application Italy, Feb. 17, 1981, 19797 A/81

Int. Cl.³ B32B *5/16*; B29H *9/02*

U.S. Cl. 428—330 **4 Claims**

1. Manufactured articles based on hydraulic binders containing fibrillated films, or net-like flat structures, of at least one orientable film-forming synthetic polymer as reinforcement, said fibrillated films or net-like structures having incorporated therein from 1 to 30% by weight of at least one carbonate of an alkaline-earth metal.

4,425,403

COATED PLASTIC ARTICLE

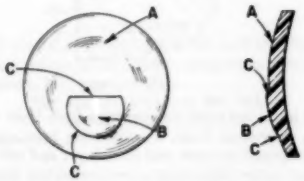
Takashi Taniguchi, Yasu, and Jiro Mihae, Ohtsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 358,916

Claims priority, application Japan, Mar. 26, 1981, 56-43197

Int. Cl.³ B32B *5/16, 27/36*

U.S. Cl. 428—331 **12 Claims**



1. A coated plastic article comprising a shaped plastic substrate having a coating, said shaped plastic substrate comprising a polymer of diethylene glycol bisallyl carbonate, said shaped plastic substrate having at least one unsmooth portion on at least a single surface thereof, said shaped plastic substrate having been treated with activated gas, ionized radiation and/or active ray previously to a coating process, said coating being dyeable or permeable to dyes, and said coating comprising at least one polymer selected from the group consisting of polyurethane, melamine resin, organosilicon resin, polyvinyl alcohol, acrylic resin, polyamide and epoxy resin.

7. The coated plastic article of claim 1, wherein the coating

further contains fine silica particles with an average diameter in the range of 5 to 200 nm.

4,425,404

MAGNETIC RECORDING MEDIUM

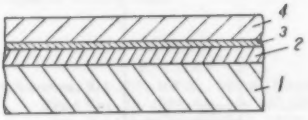
Takashi Suzuki, Takatsuki; Kunio Hibino, Hirakata; Mikio Murai, and Takashi Fujita, both of Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1982, Ser. No. 419,457

Claims priority, application Japan, Apr. 30, 1982, 57-73605; Apr. 30, 1982, 57-73606; Apr. 30, 1982, 57-73607; Apr. 30, 1982, 57-73608; Aug. 27, 1982, 57-149672

Int. Cl.³ H01F *10/02*; B32B *15/04*

U.S. Cl. 428—341 10 Claims



1. A magnetic recording medium having an oxygen-containing thin ferromagnetic metal layer formed on a nonmagnetic substrate, wherein at least one compound, capable of suppressing hydration of ferromagnetic metal ions by acting upon the ionized ferromagnetic metal, selected from the group consisting of dihydric phenols, diaryl ketones, alkyl phenols, naphthols, quinones, nitroso compounds and oxime compounds is introduced on or around said thin ferromagnetic metal layer.

4,425,405

INK JET RECORDING SHEET

Mutsuaki Murakami, Kawasaki; Yasutaka Hiromori, Hirakata, and Hiroshi Naito, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Aug. 19, 1981, Ser. No. 294,152

Claims priority, application Japan, Aug. 20, 1980, 55-115236

Int. Cl.³ B32B *5/16, 27/10*

U.S. Cl. 428—342 8 Claims

1. A recording sheet for ink jet recording comprising a paper support having a composition coated on at least one surface thereof, said composition comprising an aqueous dispersion of a binder resin selected from the group consisting of polyvinylpyrrolidone, vinylpyrrolidone-vinyl acetate copolymer and mixtures thereof, and a white filler used in a weight ratio to said binder of 10:1 to 0.2:1, said composition being applied in an amount of 3 to 50 g/m^2 on a dry basis.

4,425,406

METHOD AND APPARATUS FOR PRODUCING LAMINATED GLASS

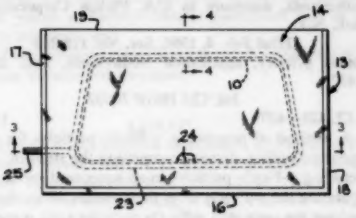
Horus P. Palma, Southfield, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Jun. 21, 1982, Ser. No. 390,314

Int. Cl.³ B32B *17/00, 31/00*

U.S. Cl. 428—12 4 Claims

1. For use in the manufacture of laminated glass including an assembly composed of two sheets of glass and an interposed layer of thermoplastic material, a flexible vacuum bag for receiving the assembly for lamination, said bag comprising side panels formed of fiber glass cloth, and a coating of silicon-rubber sealant applied to the outer surface only of said panels, wherein the coating of silicon-rubber seals the interstices between the glass fibers but leaves the inner surface of the side



panels bare and the individual glass fibers exposed for direct contact with the glass sheets.

4,425,407

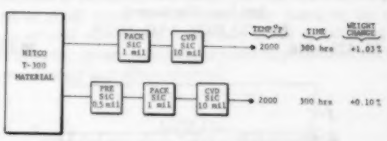
CVD SIC PRETREATMENT FOR CARBON-CARBON COMPOSITES

Francis S. Galasso, Manchester, and Richard D. Veltri, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 24, 1982, Ser. No. 391,615

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—368 5 Claims



1. A carbon-carbon composite article having carbon fibers surrounded by a carbon matrix characterized in that diffusion of silicon within the fibers occurs at a different rate than does the diffusion of silicon within the matrix, said article being adapted to receive a subsequent uniform protective coating, said article comprising:

carbon-carbon composite substrate having on its outer surface, a 0.1 to 5 mil layer of CVD SiC.

4,425,408

PRODUCTION OF SINGLE CRYSTAL SEMICONDUCTORS

Jules D. Levine, Dallas; William R. McKee, Plano, and Kent R. Carson, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 290,917, Aug. 7, 1981. This application Nov. 12, 1982, Ser. No. 440,988

Int. Cl.³ C03B *29/60*

U.S. Cl. 428—403 2 Claims

1. A particle of single crystal semiconductor material encompassed within a skin comprising a thermally stable compound formed by the reaction of said material with a reactive gas at an elevated temperature.

4,425,409

METHOD OF PREPARING A MAGNETIC PIGMENT OF γ-FE_2O_3 PARTICLES AND RECORDING ELEMENT

Hendrikus F. Huisman, and Harm J. Groen, both of Oosterhout, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,258

Claims priority, application Netherlands, Feb. 23, 1979, 7901437

Int. Cl.³ H01F 10/02

U.S. Cl. 428—457 11 Claims

1. A method of processing γ-Fe_2O_3 particles for use in a magnetic recording element comprising the steps of:

preparing γ-Fe_2O_3 particles in an aqueous dispersion;

separating the γ-Fe_2O_3 from the aqueous dispersion;

washing the separated γ-Fe_2O_3 particles with water; and

drying the washed γ-Fe_2O_3;

characterized in that prior to separating the γ-Fe_2O_3 from the aqueous dispersion, a water-soluble ammonium salt which is derived from a weakly acidic organic acid is added to the aqueous dispersion, said ammonium salt being chosen so that it volatilizes, or decomposes and then volatilizes during the drying step.

4,425,410

DRYING AGENT IN MULTI-LAYER POLYMERIC STRUCTURE

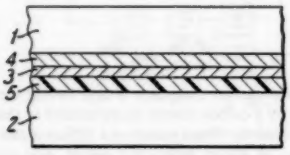
Christopher J. Farrell, Arlington Heights; Boh C. Tsai, Rolling Meadows, and James A. Wachtel, Buffalo Grove, all of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 101,703, Dec. 10, 1979. This application Sep. 15, 1982, Ser. No. 418,199

The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.³ B32B 9/00, 27/18

U.S. Cl. 428—516 29 Claims



1. In a multi-layer polymeric structure having an interior layer of a moisture sensitive oxygen barrier polymer, the improvement which comprises the incorporation of a drying agent entrapped in the moisture sensitive oxygen barrier layer.

4,425,411

MOLD WITH THERMALLY INSULATING, PROTECTIVE COATING

Marcus Textor, Schaffhausen; Tibor Kugler, Thayngen, both of Switzerland, and Jean-Pierre Gabathuler, Vancouver, Canada, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 10, 1982, Ser. No. 376,415

Claims priority, application Switzerland, May 21, 1981, 3309/81

Int. Cl.³ B22D 13/10

U.S. Cl. 428—702 17 Claims

1. A mold for casting metal wherein said mold has a work face and a thermally insulating protective coating on said work face, wherein said protective coating consists essentially of sub-micron ceramin metal oxide particles having a particle size of 5–50 nm.

4,425,412

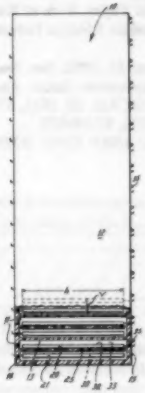
LEAD/ACID BATTERY HAVING HORIZONTAL PLATES

John F. Dittmann; Elliott M. Morse, and Earl S. Carr, all of Joplin, Mo., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed May 26, 1982, Ser. No. 382,246

Int. Cl.³ H01M 2/12, 6/46, 4/56

U.S. Cl. 429—53 13 Claims



1. A maintenance-free lead/acid cell of improved deep cycle life, comprising

a container,

a stack of flat horizontal plates sealed in the container and comprising at least one negative plate of spongy lead and at least one positive plate of lead peroxide,

separator means between each pair of adjacent plates in the cell,

the container containing unabsorbed, free sulfuric acid electrolyte, the level of the unabsorbed electrolyte in the container being sufficient to wet but not to cover at least one face of the uppermost negative plate in the plate stack, so that at least the top surface of said uppermost negative plate is normally above the electrolyte level,

the container being sealed so that electrolyte cannot escape from it and having a relief valve for venting excessive gas pressure therein,

the height of the plate stack being no more than half its major horizontal dimension.

4,425,413

THERMAL INSULATION

Botho Ziegenbein, Neckarsteinach, and Harald Reiss, Leimen, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,435

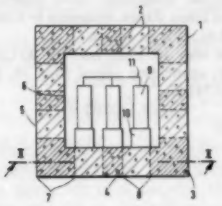
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046032

Int. Cl.³ H01M 2/02

U.S. Cl. 429—112 8 Claims

1. Thermal insulation comprising at least one hermetically sealed cavity bounded by walls and without rigid bracing members between walls, filled with at least one insulating material in powder form said cavity having at least one first region in which the insulating material therein is more compact to resist inward and outward bending and pressures of an against the boundary walls, and having at least one second region in which the insulating material is less compact than the insulating material of the first region to impart low thermal conductivity to the second region, said first and second regions of the cavity are filled with very fine ceramic powder which is doped with microfibers, with the ceramic powder filled into

the first region having a density of $\delta \leqq 0.5$ g/cm^3 and the ceramic powder in the second region having a density of $\delta \leqq 0.35$



g/cm^3 and said first and second regions being arranged immediately adjacent to each other.

4,425,414

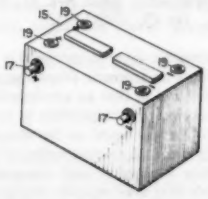
BATTERY

Howard Solomon, 921 NW. 198 St., Miami, Fla. 33169

Filed Dec. 14, 1982, Ser. No. 432,275

Int. Cl.^{3} H01M *2/02, 10/38, 10/50*

U.S. Cl. 429—179 2 Claims



1. In combination, a battery and an adaptor means, said combination comprising:

(a) said adaptor means including a first adaptor element and a second adaptor element disposed in spaced apart relation to one another and each interconnected to said battery in current conducting relation thereto,

(b) said battery comprising a substantially closed housing including at least a top, bottom, front and rear walls and a first side wall and a second side wall;

(c) a plurality of positive terminals integrally formed on said first adaptor element and further disposed in communicating relation with said top wall and front wall,

(d) a first positive terminal disposed in communicating relation with said top wall and being positioned adjacent said first side wall and said rear wall, a second positive terminal disposed in communicating relation with said top wall and being positioned adjacent said first side wall and said front wall; and a third positive terminal being disposed in communicating relation with said front wall and being positioned adjacent said top wall and said first side wall;

(e) a plurality of negative terminals integrally formed on said second adaptor element and further disposed in communicating relation with said top wall and said front wall,

(f) a first and a second negative terminal each positioned in communicating relation with said top wall, said first negative terminal being disposed adjacent said second side wall and said rear wall and said second negative terminal being positioned adjacent said second side wall an said top wall; a third negative terminal disposed in communicating relation with said front wall and positioned adjacent said side wall and said top wall,

(g) each of said plurality of positive and negative terminals comprising a threaded recess of common size,

(h) at least two terminal posts each including a threaded base dimensioned to fit within any of said threaded recesses; and at least four terminal posts each including a threaded exterior portion dimensioned to fit within any of said recesses,

(i) one of said terminal posts secured within one of said plurality of positive terminals and the other of said terminal posts secured within a correspondingly positioned one of said negative terminals, and

(j) each of said terminal plugs being secured within one of the remaining unoccupied terminals.

4,425,415

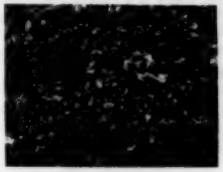
ETCHED BETA"-ALUMINA CERAMIC ELECTROLYTE

Raj N. Singh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 289,580, Aug. 3, 1981, Pat. No. 4,381,968. This application Aug. 19, 1982, Ser. No. 409,399

Int. Cl.^{3} H01M *6/18*

U.S. Cl. 429—193 8 Claims



1. A cationically-conductive ceramic electrolyte body wherein its entire surface is a chemically-etched surface, said ceramic electrolyte body being of symmetric polarization, said ceramic eletrolyte body consisting essentially of a composition ranging from an alkali metal beta"-alumina phase to a mixture of alkali metal beta"-alumina phase and up to about 50% by volume of alkali metal beta-alumina phase based on the total volume of said electrolyte body, said alkali metal being selected from the group consisting of sodium, potassium, lithium, mixtures thereof and alloys thereof.

4,425,416

COLOR FILTER AND METHOD FOR MANUFACTURING THE SAME

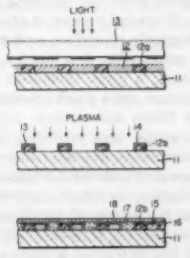
Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1982, Ser. No. 368,026

Claims priority, application Japan, Apr. 20, 1981, 56-60404

Int. Cl.^{3} G03F *5/00*

U.S. Cl. 430—7 18 Claims



1. A color filter having different discrete adjacent colored areas formed on a substrate to form color patterns on the substrate comprising a first pattern of a dyed resist formed on said substrate with a surface layer only of said dyed resist having been formed into a polymeric film by exposing to a plasma gas, and a second and subsequent patterns of a number

equal to the number of colors used of dyed resists serially formed on said substrate and each having a surface layer only formed into a polymeric film by exposing to a plasma gas.

4,425,417

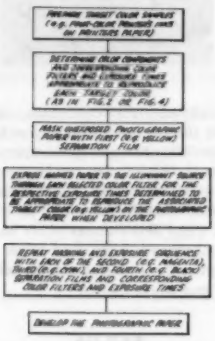
METHOD FOR PREPARATION OF A COLOR PROOF FROM A SET OF COLOR SEPARATION FILMS, MASKS OR THE LIKE

Marjorie D. Ingalls, and Richard D. Ingalls, both of E. 1104 57th, Spokane, Wash. 99203

Continuation-in-part of Ser. No. 76,499, Sep. 17, 1979, abandoned, which is a continuation of Ser. No. 7,702, Jan. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 794,987, May 9, 1977, abandoned. This application Mar. 1, 1982, Ser. No. 353,399

Int. Cl.³ G03C 5/04

U.S. Cl. 430—30 25 Claims


PREPARE TARGET COLOR SAMPLES (e.g. FOUR-COLOR PRINTER INKS ON PRINTERS PAPER)
DETERMINE COLOR COMPONENTS AND CORRESPONDING COLOR FILTERS AND EXPOSURE TIMES APPROPRIATE TO REPRODUCE EACH TARGET COLOR (AS IN FILE OF FIG. 4)
MASK DIAZOTIZED PHOTOGRAPHIC PAPER WITH FIRST (e.g. YELLOW) SEPARATION FILM
EXPOSE MASKED PAPER TO THE ILLUMINANT SOURCE THROUGH EACH SELECTED COLOR FILTER FOR THE RESPECTIVE EXPOSURE TIMES DETERMINED TO BE APPROPRIATE TO REPRODUCE THE ASSOCIATED TARGET COLOR (e.g. YELLOW) ON THE PHOTOGRAPHIC PAPER WHEN DEVELOPED
REPEAT MASKING AND EXPOSURE SEQUENCE WITH EACH OF THE SECOND (e.g. MAGENTA), THIRD (e.g. CYAN), AND FOURTH (e.g. BLACK) SEPARATION FILMS AND CORRESPONDING COLOR FILTERS AND EXPOSURE TIMES
DEVELOP THE PHOTOGRAPHIC PAPER

1. The method of preparation of a color proof from a set of color separation films, masks, or the like comprising:

(a) preparing target color samples in the form of swatches made from respective primary color and black printer's inks and determining the color component makeup of each in relation to the illuminant source;

(b) determining from the color component makeup of the samples and from the color reference data base, the respective color filters and respective exposure times appropriate to substantially reproduce each target color on the photographic media when developed, said color reference data base relating a given illuminant souce at a given Kelvin temperature and a given spectral distribution with various color filters and various color photosensitive photographic media, and providing information as to which filters and respective filter exposure times are appropriate, when used with the illuminant source and given photographic media, to substantially reproduce a given target color on the developed photographic media;

(c) successively overlaying each color separation film, mask or the like on the undeveloped photographic media and exposing the photographic media to the illuminant source through each color separation film, mask or the like and its associated group of color filters for the determined respective exposure times to substantially reproduce each separation film color image in the associated target color on the photographic media when developed, and

(d) developing the exposed photographic media to provide the color proof.

4,425,418

LIQUID DEVELOPERS FOR ELECTROPHOTOGRAPHY AND DEVELOPING METHOD USING THE SAME

Akio Iwaki; Toyoki Nishijima; Akio Iijima, and Tatsuya Sasazawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,585

Claims priority, application Japan, May 19, 1981, 56-74107; May 19, 1981, 56-74108

Int. Cl.³ G03G 9/12

U.S. Cl. 430—106 6 Claims

1. A liquid developer for electrophotography which comprises (a) a coloring agent, (b) a charge control agent, (c) at least one polymer selected from the group consisting of a polyethylene, a polypropylene, an ethylene copolymer and a propylene copolymer in an electro-insulating liquid and (d) a hydrocarbon resin that is soluble in a hydrocarbon solvent and contains a 1,3-pentadiene moiety.

4,425,419

PHOTOSENSITIVE COMPOSITION

Osamu Sasaya; Masahiro Nishizawa; Hiroshi Yokomizo; Kiyoshi Miura, and Yoshifumi Tomita, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 184,960, Sep. 8, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 333,757

Claims priority, application Japan, Sep. 14, 1979, 54-117249

Int. Cl.³ G03C 1/52

U.S. Cl. 430—179 4 Claims

1. A dry photosensitive layer comprising a photosensitive composition containing an aromatic diazonium salt as a major constituent, characterized in that an amphoteric surfactant is added to said photosensitive composition in an amount of at least 0.01 percent by weight based on the weight of said aromatic diazonium salt and in an amount sufficient to increase the sensitivity and reduce fogging of said composition, wherein said amphoteric surfactant is selected from a group consisting of lauryl betaine, stearyl betaine and alkyl betaine.

4,425,420

PRODUCTION OF A PLANOGRAPHIC PRINTING PLATE THROUGH THE SILVER COMPLEX DIFFUSION TRANSFER PROCESS

Antoine A. De Jaeger, Wilrijk; Gina C. De Lamper, Hoboken; Albert L. Poot, Kontich, and Albert P. Wagemans, Edegem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Feb. 23, 1982, Ser. No. 351,535

Claims priority, application United Kingdom, Feb. 25, 1981, 8105930

Int. Cl.³ G03C 5/54

U.S. Cl. 430—204 8 Claims

1. In a process for producing a planographic printing plate by the silver complex diffusion transfer reversal process comprising the steps of:

(1) providing a light-sensitive silver halide material containing a silver halide emulsion layer with a silver halide coverage equivalent to at least 1 g of silver nitrate per sq.m;

(2) image-wise photo-exposing said silver halide emulsion layer;

(3) developing the resultant latent image in the presence of a silver halide complexing agent and contacting the exposed silver halide emulsion material with an anodized aluminium plate to thereby transfer image-wise complexed silver halide onto said plate surface and form thereon a silver image, and

(4) separating the silver halide material from the aluminium plate; the improvement wherein the thickness of the anodized surface layer is in the range of 0.50 to 2.00 μm, the anodized plate before coming into contact with said emulsion layer is hydration-sealed at a temperature of at least

60° C. but not higher than 85° C., to a degree reducing to less than one half the amount of dye adsorbed thereby in the dye immersion test described in the specification compared to an unsealed anodized plate, and the development of the light-sensitive material is carried out with a developing composition having a pH of at least 12 and containing:

dissolved sulphite expressed equivalent to sodium sulphite in the range of 80–160 g/liter,

dissolved thiosulphate expressed equivalent to sodium thiosulphate in the range of 2–20 g/liter, and

a mixture of hydroquinone and at least one secondary developing agent of the class of 1-phenyl-3-pyrazolidinones and p-N-methylaminophenol, the amount of hydroquinone being not smaller than 0.078 mole per liter, the amount of all such secondary developing agents being not smaller than 0.0080 mole per liter and the molar ratio of hydroquinone to such secondary developing agents being not smaller than 9.7.

4,425,421

PROCESS FOR THE PRODUCTION OF A LAMINAR ARTICLE AND SUCH ARTICLE CONTAINING INFORMATION IN A HYDROPHILIC COLLOID STRATUM

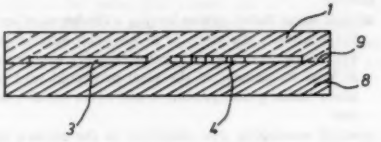
Antonius A. Rutges, Boechout; Ludovicus M. Mertens, Halle, and Maurits W. Van Grasdorff, Berchem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Sep. 22, 1982, Ser. No. 421,419

Claims priority, application United Kingdom, Oct. 9, 1981, 8130557

Int. Cl.³ G03C *5/54, 1/40, 1/48*

U.S. Cl. 430—238 **14 Claims**



1. Process for the production of a sealed laminate comprising a support layer of a heat-meltable material, an image layer containing a photographic image present in a hydrophilic colloid binder and a protective sheet, characterized by the steps comprising:

(1) disposing adherently on a polymeric meltable support layer an image layer for receiving an image and containing development nuclei acting as a catalyst for development of silver complexes to silver or a mordant suited for the mordanting of dyes applied in a dye diffusion transfer imaging process, said image layer containing also a photosensitive iron(III) compound capable of forming iron(II) ions on exposure to actinic radiation, and a hydrophilic colloid that undergoes a reduction in water-solubility on oxidization of said iron(II) ions with hydrogen peroxide,

(2) pattern-wise photo-exposing said hydrophilic colloid binder layer,

(3) treating the exposed hydrophilic colloid binder layer with an aqueous peroxide solution to reduce thereby the water-solubility of said binder in the exposed areas,

(5) removing the unexposed, unhardened and still water-soluble areas of said hydrophilic colloid binder layer by wash-off to leave on the support image layer regions corresponding with the exposed areas,

(6) forming a silver or dye diffusion transfer image in the remaining image layer regions either immediately after step (2) or immediately after step (5),

(7) providing a protective sheet formed of a heat-meltable polymeric material which in the melted state is capable of fusing into a homogeneous mass with melted support layer material, and

(8) heat-sealing said protective sheet to said support layer in the areas of the support free of said image layer to form in said areas a homogeneous mass, whereby said image layer is sealed between said support layer and said protective sheet and peeling apart of said support layer and protective sheet material is prevented.

4,425,422

FORMATION OF COLOR PHOTOGRAPHIC IMAGE WITH AZO DYE CONTAINING ALKOXY OR THIOALKOXY METAL CHELATING GROUP

Tawara Komamura; Jiro Takahashi, both of Hachioji, and Ryuichiro Kobayashi, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

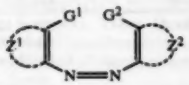
Filed May 6, 1982, Ser. No. 375,547

Claims priority, application Japan, May 11, 1981, 56-71165

Int. Cl.³ G03C *1/40, 1/10, 5/54, 7/00*

U.S. Cl. 430—242 **6 Claims**

1. A method for the formation of a color photographic image comprising exposure and development of a photographic element, said photographic element comprising at least one silver halide emulsion layer, a compound capable of releasing a diffusible azo dye compound during development, and at least one mordant layer arranged on a support, said color image formation being effected by the reaction of said azo dye compound with multivalent metallic ions, said azo compound having the formula:



(I)

wherein G^1 is an alkoxy or a thioalkoxy metallic chelating group; G^2 is a metallic chelating group in which the radical involving the chelate is oxygen; Z^1 is a group of atoms necessary to form an aromatic carbocyclic ring; and Z^2 is a group of atoms necessary to form an aromatic carbocyclic ring or a heterocyclic ring, said reaction of said azo dye compound with said metallic ions forming a metal complex by coordination of the azo group and the G^1 and G^2 groups of said azo dye compound with said multivalent metallic ions.

4,425,423

AUGER MICROLITHOGRAPHY WITH REGARD TO AUGER WINDOW

Chia-Gee Wang, P.O. Box 211, Millwood, N.Y. 10546

Continuation-in-part of Ser. No. 171,573, Jul. 23, 1980, Pat. No. 4,350,755. This application Sep. 17, 1982, Ser. No. 419,405

The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.

Int. Cl.³ G03C *5/04, 1/00, 1/02, 5/24*

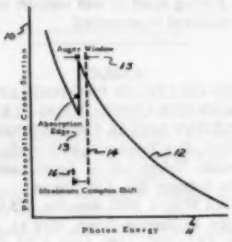
U.S. Cl. 430—264 **16 Claims**

1. A method of producing a high resolution latent image pattern, comprising:

preparing a photosensitive layer of a carrier having dispersed therein (a) sensitizing atomic elements capable of absorbing X-rays of a substantially monochromatic wavelength with release of Auger electrons from an inner shell ionization thereof, and (b) a material activatable by said Auger electrons to undergo a physicochemical change, and exposing a selected portion of said layer to from said pattern to X-rays of said substantially monochromatic wavelength to thereby induce said physicochemical change in said material in said pattern.

2. The method of claim 1 wherein sufficient of the X-rays exposing said selected portion have an energy within the range of the Auger window of said sensitizing atomic element to produce the desired latent image.

3. The method of claim 2 wherein said X-rays exposing said select portion have an energy exceeding x electron volts (eV) of an inner edge of said sensitizing atomic element, x being determined by the wavelength $\lambda(A^\circ)$ of said X-rays according to the formula $x=248/\lambda^2$.



4. The method of claim 3 wherein the Auger window includes X-rays up to the energy whereat the Compton photons at a scattering angle of 80° or more have an energy not exceeding that of the said inner edge.

9. The method of claim 4 wherein said carrier, sensitizing atomic element and material are selected from the group consisting of the following combinations:

Carrier	Sensitizing Atomic Element	Material
Gelatin	Cl, Br, I	Silver Halide Crystal
Gelatin	Ag	Silver Halide Crystal
Dichlor-acrylates	Cl	Dichloracrylates
None	Cl, Br, I	Lead Halide
None	Pb	Lead Halide
Gelatin	Cr	Dichromate Coating

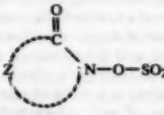
4,425,424
DYE-FORMING COMPOSITIONS

Henry W. Altland; Raymond W. Ryan, Jr.; Phillip P. Senise, Jr., and Michael J. Lindstrom, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 366,886, Apr. 8, 1982, abandoned. This application Jun. 21, 1982, Ser. No. 390,488
Int. Cl.³ G03C 1/52, 1/68
U.S. Cl. 430—270 18 Claims

1. In an activating radiation-sensitive imaging composition comprising (1) a leuco form of a dye having one or more removable hydrogen atoms the removal of which forms a compound colored differently from the leuco form and (2) a photooxidant capable of converting said leuco dye to said differently colored form when said composition is exposed to activating radiation,

the improvement wherein said photooxidant has the structural formula



wherein

R^1 is a carbocyclic or heterocyclic ring containing from 5 to 10 ring atoms, and

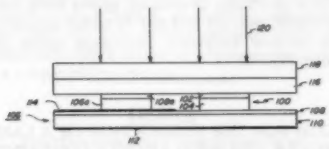
Z represents the non-metallic atoms necessary to complete 1 or more rings containing from 5 to 17 ring atoms,

said photooxidant being present in an amount effective to provide an improved difference density of said colored form compared to the difference density produced by the same composition lacking said photooxidant.

4,425,425
RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER

Thomas I. Abbott, Rochester, and Cynthia Jones, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,907, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,222
Int. Cl.³ G03C 1/76
U.S. Cl. 430—502 20 Claims



1. In a radiographic element comprised of

first and second imaging means,

at least said first imaging means including a silver halide emulsion comprised of a dispersing medium and radiation-sensitive silver halide grains, and

a support interposed between said imaging means capable of transmitting radiation to which said second imaging means is responsive

the improvement comprising said first imaging means containing

tabular silver halide grains having a thickness of less than 0.3 micron, a diameter of at least 0.6 micron, and an average aspect ratio of greater than 8:1 accounting for at least 50 percent of the total projected area of said silver halide grains present in said silver halide emulsion and

spectral sensitizing dye adsorbed to the surface of said tabular silver halide grains in an amount sufficient to substantially optimally sensitize said tabular grains.

4,425,426
RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER

Thomas I. Abbott, Rochester, and Cynthia G. Jones, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,910
Int. Cl.³ G03C 1/76
U.S. Cl. 430—502 15 Claims

1. In a radiographic element comprised of

first and second imaging means,

at least said first imaging means including a silver halide emulsion comprised of a dispersing medium and radiation-sensitive silver halide grains, and

a support interposed between said imaging means capable of transmitting radiation to which said second imaging means is responsive

the improvement comprising said first imaging means containing

tabular silver halide grains having a thickness of less than 0.2 micron and an average aspect ratio of from 5:1 to 8:1 accounting for at least 50 percent of the total projected area of said silver halide grains present in said silver halide emulsion and

spectral sensitizing dye adsorbed to the surface of said tabular silver halide grains in an amount sufficient to substantially optimally sensitize said tabular grains.

4,425,427

SIMULTANEOUS, KINETIC, SPECTROPHOTOMETRIC ANALYSIS OF BLOOD SERUM FOR MULTIPLE COMPONENTS

Thomas K. J. Luderer, BR Dieren, Netherlands, assignor to Vitafin N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 130,078, Mar. 13, 1980, abandoned, which is a continuation of Ser. No. 12,859, Feb. 16, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,796

Int. Cl.³ G01N *33/52, 33/62, 33/66, 33/68*

U.S. Cl. 435—10 21 Claims

1. A method for carrying out the substantially simultaneous spectrophotometric analysis of blood serum samples for multiple components, contained within a single reaction medium, comprising the steps of:

(a) adding a first reagent mixture to initiate a colorimetric reaction with at least one of said components to be analyzed, to produce a first reaction mixture;

(b) incubating said first reaction mixture for a preselected length of time;

(c) adding a second reagent to initiate at least one additional colorimetric reaction with at least a second sample component to produce a second reaction mixture;

(d) incubating said second reaction mixture for a preselected length of time; and

(e) substantially simultaneously spectrophotometrically analyzing said second reaction mixture at a plurality of wave lengths to at least determine the presence of said components in said serum sample;

said spectrophotometric analysis of step (e) being a kinetic analysis of at least one of said colorimetric reactions, and comprising the kinetic analysis of a plurality of said colorimetric reactions, the incubation times of steps (b) and (d) being selected so that substantial kinetic linearity will be exhibited by said colorimetric reactions during the performance of step (e), and said components comprising at least cholesterol and triglyceride, and said fist colorimetric reaction being a cholesterol specific colorimetric reaction.

4,425,428

NOVEL PEPTIDE AND PEPTOLIDE SUBSTRATES FOR MAMMALIAN COLLAGENASE

Harold I. Weingarten, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 366,520, Apr. 8, 1982. This application Apr. 18, 1983, Ser. No. 485,762

Int. Cl.³ C12Q *1/38, 1/36;* C07C *103/52*

U.S. Cl. 435—23 3 Claims

1. A method for the determination of collagenase in a biological sample comprising reacting an aqueous solution of said sample with a peptide or peptolide substrate selected from the group consisting of

R_1-Pro-Leu-Gly-Ile-Leu-Gly-Leu-R_2,

R_1-Gly-Pro-Leu-Gly-Ile-Leu-Gly-Ala-R_2,

R_1-Pro-Leu-Gly(O-Ile)-Leu-R_2,

R_1-Pro-Leu-Gly(O-Leu)-R_2, and

R_1-Pro-Leu-Gly(O-Leu)-Ala-R_2,

wherein

R_1 is H or N-protecting group, and

R_2 is terminal amide, carboxyl or ester group, under conditions suitable for the enzymatic cleavage of the substrate to form a product, and measuring the amount of product formed or unreacted substrate.

4,425,429

COMPOSITION OF MATTER AND PROCESS

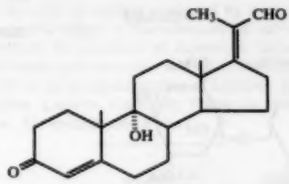
John C. Knight, and Merle G. Wovcha, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 24, 1981, Ser. No. 286,308

Int. Cl.³ C12P *33/16, 33/06;* C12R *1/33*

U.S. Cl. 435—55 5 Claims

1. A fermentation process for preparing a compound of the formula



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which comprises cultivating *Mycobacterium fortuitum* NRRL B-12433 in an aqueous nutrient medium under aerobic conditions in the presence of a steroid with a C-17 side chain and recovering the desired product.

4,425,430

PROCESS FOR PRODUCTION OF ANTIBIOTICS AND NOVEL ANTIBIOTICS PRODUCED THEREBY

Akio Iwasaki, Kawasaki; Takeo Deushi, Higashimurayama; Isamu Watanabe, Higashimurayama, and Toshihito Mori, Higashimurayama, all of Japan, assignors to Kowa Company, Ltd., Aichi, Japan

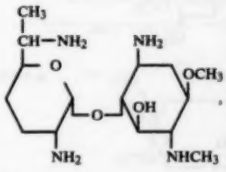
Filed Jul. 9, 1981, Ser. No. 281,898

Claims priority, application Japan, Jul. 15, 1980, 55-95602; Dec. 27, 1980, 55-185087

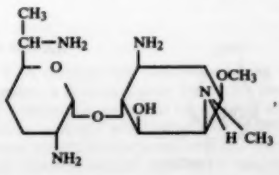
Int. Cl.³ C12P *19/48;* C12R *1/01;* A01N *63/02*

U.S. Cl. 435—80 4 Claims

1. A process for producing an antibiotic, which comprises cultivating an antibiotic KA-6606-producing strain of *Saccharopolyspora hirsuta* KC-6606 in a nutrient culture medium, isolating an antibiotic KA-6606-containing substance from the culture broth, and recovering from the antibiotic KA-6606-containing substance a substantially pure material containing an antibiotic selected from the group consisting of antibiotic KA-6606 VII, KA-6606 VIII, KA-6606 IX, KA-6606 X, KA-6606 XI, KA-6606 XII, KA-6606 XIII, KA-6606 XIV, KA-6606 XV, KA-6606 XVI, and KA-6606 XVII or a mixture thereof, wherein the formulae of the antibiotics are as follows:



KA-6606 VII,



KA-6606 VIII,

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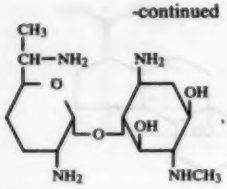
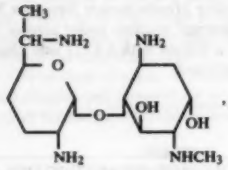
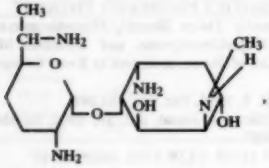
KA-6606 IX,



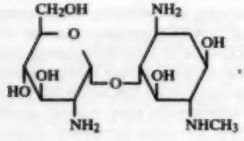
KA-6606 X,



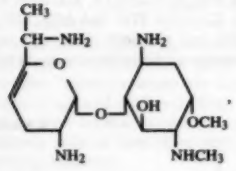
KA-6606 XI,



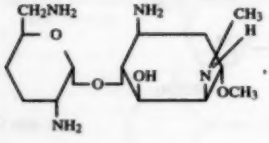
KA-6606 XII,



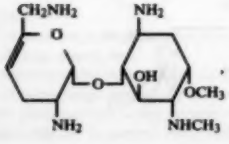
KA-6606 XIII,



KA-6606 XIV,



KA-6606 XV,



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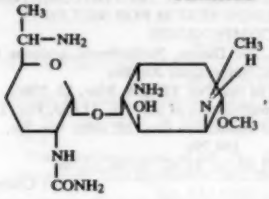
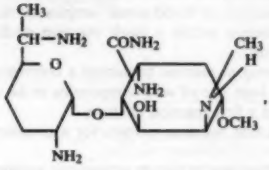
KA-6606 XVI,



KA-6606 XVII.



4,425,431

PRODUCTION OF AN ALLOSE-CONTAINING POLYSACCHARIDE

Hisao Takemoto, and Tatsuo Igarashi, both of Shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 30,444, Apr. 16, 1979, Pat. No. 4,321,979. This application Mar. 16, 1981, Ser. No. 243,821

Claims priority, application Japan, Apr. 28, 1978, 53-45918; May 12, 1978, 53-149715

Int. Cl.³ C12P *19/04;* C12R *1/38*

U.S. Cl. 435—101 **7 Claims**

1. The process for producing an allose containing polysaccharide which comprises aerobically cultivating a strain of *Pseudomonas viscogena* (ATCC 310504) in a nutrient medium containing a carbon source selected from the group consisting of methanol, ethanol, isopriopanol, ethylene glycol, propylene glycol, glycerin, and glucose to obtain the polysaccharide as an extracellular product and recovering said product.

4,425,432

PROPAGATION OF MICROBIAL CELLS ON SINGLE CARBON PRODUCTS

Joseph G. Zeikus, and Lee H. Lynd, both of Madison, Wis., assignors to Wisconsin Alumini Research Foundation, Madison, Wis.

Filed Jul. 23, 1981, Ser. No. 286,246

Int. Cl.³ C12P *7/54, 7/52;* C12N *1/20;* C12R *1/01*

U.S. Cl. 435—140 **13 Claims**

1. A process of producing microbial cells usable as a protein source which comprises cultivating the bacterium *Butyribacterium methylotrophicum* ATCC No. 33266 anaerobically in a medium containing essential minerals and growth factors and a single carbon product selected from carbon monoxide, carbon dioxide and methanol as the main source of assimilable carbon, and separating, then collecting the thus propagated microbial cells of said bacterium.

4,425,433

ALCOHOL MANUFACTURING PROCESS

Alan M. Neves, 1596 24th St., Ogden, Utah 84401

Continuation-in-part of Ser. No. 88,196, Oct. 23, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 195,326

Int. Cl.³ C12P *7/08*

U.S. Cl. 435—163 **29 Claims**

1. A process for the production of alcohol from cellulosic material, the process consisting essentially of:

obtaining a feedstock, at least a portion of which is a cellulosic material;

pressurizing the feedstock with steam to a first pressure within the range of about 250 psi to about 1500 psi at a temperature within the range of about 400° F. to about 600° F. for a period of between about three and about thirty minutes;

disrupting the internal structure of at least a portion of the cellulosic material by subjecting said cellulosic material to a substantially reduced second pressure, the disrupted cellulosic material being readily hydrolyzable into fermentable sugars;

hydrolyzing the disrupted cellulosic material with a first dilute acid solution to produce fermentable sugars;

fermenting the fermentable sugars to produce alcohol; and

concentrating the alcohol by passing the alcohol through a distillation column.

4,425,434
IMMOBILIZATION OF BIOLOGICALLY ACTIVE SUBSTANCES

Alan Rosevear, London, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation-in-part of Ser. No. 13,405, Feb. 26, 1979, Pat. No. 4,323,650, which is a continuation of Ser. No. 773,157, May 1, 1977, abandoned, which is a continuation of Ser. No. 587,201, Jun. 16, 1975, abandoned. This application Aug. 11, 1981, Ser. No. 291,958

Claims priority, application United Kingdom, Jun. 25, 1974, 28212/74

The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.

Int. Cl.³ C12N *11/14, 11/06, 11/04*

U.S. Cl. 435—176 **11 Claims**

1. A method for the preparation of discrete particles containing a biologically active substance, comprising discrete particles of porous support material having a biologically active substance immobilised in the pores thereof, which method comprises selecting discrete particles of a porous support material having a pore size and structure that permits entry of a solution containing biologically active substance, said particles also being selected to have a particle size suitable for use in a column or fluidised bed reactor, introducing a solution containing biologically active substance into the pores of said particles of porous support material substantially to fill the pore volume of said particles of porous support material, treating the solution introduced into the pores with a precipitating agent and a cross-linking agent, said treatment with a precipitating agent precipitating said biologically active substance so as to retain said biologically active substance in the pores of the particles of porous support material and thereby hold the biologically active substance available for cross-linking by said cross-linking agent, said precipitating agent being selected from the group consisting of tannic acid in ethanol, tannic acid in acetone, tannic acid in water/isopropanol, a synthetic polyphenol in acetone, a synthetic polyphenol in water/acetone, tannic acid in water/acetone and acetone, and said treatment with a cross-linking agent cross-linking the biologically active substance precipitated in the pores of the porous support material so as to immobilise biologically active substance in the pores of the particles of porous support material, said introduction of solution containing biologically active substance and said precipitating and cross-linking being conducted so as to provide a major proportion of the immobilised biologically active substance in the pores of, rather than on the external surface of, the particles of porous support material.

4,425,435
CHOLESTEROL OXIDASE AND PROCESS FOR PRODUCING SAME

Susumu Matsui, Ootsu; Kazuo Nakajima, and Tsutomu Taniguchi, both of Kyoto, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Dec. 23, 1981, Ser. No. 333,677

Claims priority, application Japan, Dec. 26, 1980, 55-188919

Int. Cl.³ C12N *9/04;* C12Q *1/60;* C12R *1/645*

U.S. Cl. 435—190 **13 Claims**

13. A cholesterol oxidase produced by a strain of the class Basidiomycetes which is characterized by activity to oxidize cholesterol in the presence of oxygen to form cholest-5-en-3-one and hydrogen peroxide, said strain belonging to a genus selected from the group consisting of Lentinus, Oudemansiella, Flammulina, Lepiota, Coprinus, Psilocybe, Gloeocystidium, Phellinus, Auricularia, and Poria.

4,425,436
PROCESS FOR THE PRODUCTION OF AMINE OXIDASE

Kunio Matsumoto, Mishima, and Masaki Takada, Shizuoka, both of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Feb. 23, 1982, Ser. No. 351,486

Claims priority, application Japan, Feb. 23, 1981, 56-24231

Int. Cl.³ C12P *7/00;* C12N *9/02, 9/88, 1/14*

U.S. Cl. 435—191 **1 Claim**

1. A process for the production of amine oxidase, which comprises culturing an amine-oxidase-producing microorganism selected from the group consisting of *Talaromyces flavus* var. *flavus* M 4175 FERM-P No. 5866, *Eupenicillim parvum* M 5051 FERM-P No. 5870, *Petromyces alliaceus* M 4648 FERM-P No. 5867, *Neosaytorya fischeri* M 4690 FERM-P No. 5868 and *Eurotium chevalieri* M 4805 FERM-P No. 5869, and isolating the thus-prepared amine oxidase from the cultured medium.

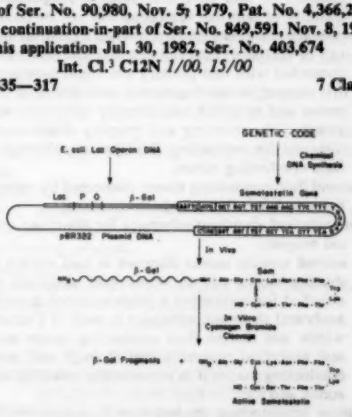
4,425,437
MICROBIAL POLYPEPTIDE EXPRESSION VEHICLE

Arthur D. Riggs, La Verne, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 90,980, Nov. 5, 1979, Pat. No. 4,366,246, which is a continuation-in-part of Ser. No. 849,591, Nov. 8, 1977. This application Jul. 30, 1982, Ser. No. 403,674

Int. Cl.³ C12N *1/00, 15/00*

U.S. Cl. 435—317 **7 Claims**



1. A recombinant microbial cloning vehicle comprising a regulon, a structural gene coding for the amino acid sequence of a desired heterologous polypeptide and one or more termination codon(s) wherein a DNA sequence coding for additional protein is interposed between said regulon and termination codon(s) without altering the reading frame of said structural gene such that a precursor protein comprising both the

amino acid sequence of the desired heterologous polypeptide and that of additional protein results from expression, the additional protein comprising a selective cleavage site adjacent the amino acid sequence of the desired heterologous polypeptide.

4,425,438

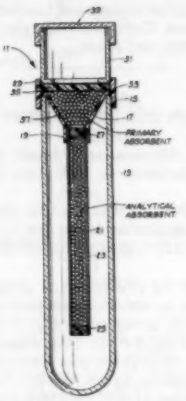
ASSAY METHOD AND DEVICE

David S. Bauman, P.O. Box 1151, Norman, Okla. 73070, and Paul A. Barstad, 1129 Robinhood La., Norman, Okla. 73701

Filed Mar. 13, 1981, Ser. No. 243,547

Int. Cl.³ G01N *33/58, 23/06;* **B65D** *71/00*

U.S. Cl. 436—527 **40 Claims**



1. A device for use in assaying a test substance comprising:

a first fluid conducting means having a first opening for receiving fluid therethrough;

a predetermined quantity of primary absorbent substance capable of binding said test substance and interacting with said test substance and an analytical reagent such that a quantity of said analytical reagent proportional to the quantity of said test substance will not be bound by said primary absorbent substance when a predetermined quantity of said analytical reagent and said test substance are contacted with said primary absorbent substance;

a first support means disposed in said first fluid conducting means and to which said primary absorbent substance is attached for retaining said primary absorbent substance disposed for contacting fluid passing through said first fluid conducting means;

second fluid conducting means connected for receiving fluid from said first fluid conducting means;

an analytical absorbent substance for absorbing said analytical reagent;

a second support means disposed in said second fluid conducting means and to which said analytical reagent is attached for supporting a predetermined quantity of said analytical absorbent substance in each of a series of zones within said second fluid conducting means such that as said analytical reagent passes through said second fluid conducting means it is sequentially absorbed within said zones; and

means for detecting the last zone in said second fluid conducting means in which analytical reagent is absorbed.

10. A method for conducting an assay of a test substance comprising:

passing a test substance and an analytical reagent through the primary absorbent substance and then the analytical absorbent substance of the device of claim 1; and

detecting the last zone in said second fluid conducting means in which analytical reagent is absorbed.

4,425,439

UPFLOW DRYING OF REGENERATED ETHYLENE OXIDE CATALYSTS

Paul J. Busse, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Jun. 28, 1982, Ser. No. 392,537

Int. Cl.³ B01J *23/96;* **C07D** *301/10*

U.S. Cl. 502—25 **16 Claims**

1. A method for regenerating a supported silver catalyst which has been used for the direct oxidation of ethylene to ethylene oxide which comprises applying to the catalyst an effective amount of a regenerant by treating the catalyst with a solution of the regenerant in an inert liquid and then drying the catalyst by passing an inert gas upwardly through the catalyst at a temperature below the boiling point of the inert liquid.

2. The method of claim 1 wherein the regenerant is selected from the group consisting of alkali metal salts.

5. The method of claim 1 wherein the drying is carried out at ambient temperature.

4,425,440

FLAME RETARDANT THERMALLY INSULATING MATERIAL

Roel Bloembergen, and Jan A. Verhave, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 3, 1982, Ser. No. 414,547

Claims priority, application United Kingdom, Sep. 11, 1981, 8127530

Int. Cl.³ C08J *9/22*

U.S. Cl. 521—54 **10 Claims**

1. A thermally insulating material, suitable for injection into cavities, which comprises cellular polymer particles, fly ash, a synthetic polymer latex binder, a foaming agent, a foam stabilizer, a thickening agent and a coalescing agent.

4,425,441

CLOSED CELL POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 Lexington Pl., El Cajon, Calif. 92021

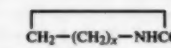
Division of Ser. No. 423,802, Sep. 27, 1982. This application Feb. 10, 1983, Ser. No. 465,514

Int. Cl.³ B01J *13/02;* **B29D** *9/00*

U.S. Cl. 521—56 **6 Claims**

1. A process for producing high temperature and flame resistant closed cell foam structure formed by the following process steps:

reacting an oxoimine having the general formula



where "x" is a positive integer from 2 to 4, with an aromatic tetracarboxylic acid dianhydride in a mole ratio thereof between about 0.05:1 and 1.5:1 to produce an N-substituted imide;

esterfying said N-substituted imide by mixing therewith a reactive solvent;

adding thereto at least one diamine;

drying the resulting liquid composition;

reducing the dried material to an average particle diameter of from about 0.5 to 10 mm.;

placing a suitable quantity of said particles into a honeycomb structure; and

heating said particles to a temperature in the range of about 90° to 150° C.;

whereby said particles expand producing a closed cell foam of substantial uniform density throughout the honeycomb structure forming a high strength structure with cell foam bonded to the honeycomb results.

4,425,442

PROCESS FOR PRODUCING OPEN CELL FOAM AND FOAMABLE COMPOUND

Akira Sato, Tsuchiura, and Tatsuo Waki, Tokyo, both of Japan, assignors to Lonseal Corporation, Tokyo, Japan

Division of Ser. No. 211,443, Nov. 28, 1980, Pat. No. 4,381,962.
This application Nov. 15, 1982, Ser. No. 441,675
Claims priority, application Japan, Dec. 25, 1979, 54-169998
Int. Cl.³ C08J 9/10
U.S. Cl. 521—93 5 Claims

1. A foamable composition for making an open-celled foam compound comprising:

(a) polyvinyl chloride resin produced by suspension polymerization;

(b) at least one organic stabilizer containing at least one Group I metal and at least one organic stabilizer containing at least one Group II metal;

(c) at least one anionic surface active agent; and

(d) a heat decomposable blowing agent.

4,425,443

COMPOSITION COMPRISING A VINYLIDENE FLUORIDE POLYMER AND A BLOWING AGENT

Pierre Georlette, Hamme-Mille, and Jean Leva, Limelette, both of Belgium, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Feb. 24, 1982, Ser. No. 351,621
Claims priority, application France, Feb. 24, 1981, 81 03899
Int. Cl.³ C08J 9/08
U.S. Cl. 521—93 9 Claims

1. Composition comprising a vinylidene fluoride polymer and a blowing agent, wherein the blowing agent comprises a hydroxycarboxylic acid or an alkali metal salt derived from one of these acids, having a thermal decomposition temperature below the thermal degradation temperature of the polymer.

4,425,444

POLYOLS FOR URETHANE-MODIFIED ISOCYANURATE FOAMS

Kenneth B. White, Chicago, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 17, 1983, Ser. No. 476,184
Int. Cl.³ C08G 18/14
U.S. Cl. 521—105 12 Claims

1. A method for the manufacture of urethane-modified polyisocyanurate foams, comprising blending an isocyanate with a "B" side, said "B" side comprising a polyol blend, a surfactant, a blowing agent, and a catalyst, said polyol blend comprising:

(a) at least 5% (wt.) of a mixture of a polyalkoxylated amine and a polyalkoxylated quaternary ammonium borate ester, the weight ratio of said polyalkoxylated amine to said polyalkoxylated quaternary ammonium borate ester being between 1:0.15 and 1:12.0;

(b) at least 40% (wt.) of a resin polyol, said resin polyol comprising at least 70% (wt.) of a combination of polymers and monomers having the general formula:

wherein n is between 0 and 50, R_{11} is either H— or CH_3—, and p and q are each integers between 1 and 10; and

(c) the remainder of said polyol blend being a polyether or polyester polyol.

4,425,445

METHOD FOR THE MANUFACTURE OF POLYISOCYANURATE FOAMS

Kenneth B. White, Chicago, Ill., assignor to Akzona, Inc., Asheville, N.C.

Filed Mar. 17, 1983, Ser. No. 476,183
Int. Cl.³ C08G 18/14
U.S. Cl. 521—105 7 Claims

1. A method for the manufacture of polyisocyanurate foams, comprising blending a "B" side with an "A" side, said "A" side comprising an isocyanate and said "B" side comprising a diol, an amine/quaternary ammonium borate ester blend, a surfactant, a blowing agent, and a metal catalyst, the weight of said metal catalyst not to exceed 1.0% of the total weight of said "B" side, and wherein said foams have a friability not exceeding 30%.

4,425,446

UREA-MODIFIED ISOCYANURATE FOAM, COMPOSITION AND METHOD

Nelson Malwitz, Brookfield, and Ronald J. Wierzbicki, New Milford, both of Conn., assignors to Sealed Air Corporation, Fairlawn, N.J.

Filed Jun. 23, 1982, Ser. No. 391,008
Int. Cl.³ C08G 18/14
U.S. Cl. 521—108 64 Claims

1. A process for the preparation of a rigid, closed cell, urea-modified isocyanurate foam, said process comprising reacting foam-forming reactants comprising multi-functional isocyanate and water in the presence of a catalytically effective amount of a first catalyst comprising an ether-containing tertiary amine which catalyzes the reaction between water and the multi-functional isocyanate and in the presence of a catalytically effective amount of a second catalyst which catalyzes the formation of isocyanurate bonds, wherein said first catalyst and said second catalyst are present in relationship to the multi-functional isocyanate and water in amounts so as to produce a rigid, closed cell foam which sets upon or after substantially complete rising thereof, which has a density of from about 0.6 to about 1.5 pound per cubic foot and which can support its own weight during foaming.

4,425,447

FLAME RETARDANT POLYMER COMPOSITION

David O. Williams, Hoffman Estates, Ill., assignor to Saytech, Inc., Scyreville, N.J.

Filed Apr. 12, 1982, Ser. No. 367,283
Int. Cl.³ C08J 9/00; B32B 5/20; C08G 18/14
U.S. Cl. 521—132 2 Claims

1. A flame retardant, self-extinguishing polyurethane foam comprising:

(a) an organic polyol,

(b) sufficient organic polyisocyanate to combine with said polyol to produce polyurethane foam,

(c) a foam-forming catalyst,

(d) a blowing agent and

(e) a sufficient amount of tribromocumene to impart flame retardant properties to the polyurethane.

4,425,448

POLYTETRAFLUOROETHYLENE RESIN WITH DEGRADATION RETARDER

Thomas P. Concannon, Newtown Square, and Mitzie K. Rummel, Secane, both of Pa., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed May 20, 1982, Ser. No. 380,353
Int. Cl.³ C08K 3/34, 3/10; C08L 27/18
U.S. Cl. 523—218 11 Claims

1. A composition consisting essentially of polytetrafluoroethylene resin and zeolite, said composition having a melt viscosity at 380° C. of at least 10^6 poises.

4,425,449

DECORATIVE SYNTACTIC FOAM PRODUCTS

William C. Dorsey, Manor Township, Westmoreland County, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 19, 1982, Ser. No. 369,918
Int. Cl.³ C08J 9/32
U.S. Cl. 523—218 25 Claims

1. A process for producing a syntactic foam structure, said process consisting essentially the steps of:

(a) preparing a mixture comprising from about 65 to about 99 percent by weight of vinyl chloride polymer plastisol, from 0 to about 30 percent by weight of suspension grade resin and from about 1 to about 10 percent by weight of expanded perlite comprised essentially of particles having a diameter of from about 50 to about 1000 microns;

(b) spreading said mixture to a desired thickness on a substrate; and

(c) fusing the spread material.

4,425,450

PAINT COMPOSITION COMPRISING HYDROXY FUNCTIONAL FILM FORMER AND IMPROVED STABLE FLOW CONTROL ADDITIVE

Stanley K. Horvath, Rochester, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 199,772, Oct. 23, 1980, abandoned, Ser. No. 199,774, Oct. 23, 1980, abandoned, and Ser. No. 199,775, Oct. 23, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 292,780
Int. Cl.³ C09D 3/00, 3/50, 3/52, 5/02
U.S. Cl. 523—334 25 Claims

1. A coating composition comprising:

(I) a film forming component comprising hydroxy functional copolymer having a number average molecular weight (M_n) of from greater than about 150 up to about 20,000 and a glass transition temperature (T_g) ranging from between about −25° C. and about 70° C., said copolymer being formed from about 5 to about 50 weight percent of hydroxy functional monoethylenically unsaturated monomers;

(II) crosslinking agent selected from amino compounds and isocyanate compounds; and

(III) a flow control additive in an amount ranging from about 0.5 to about 30 parts of resin solids in said flow control additive per 100 parts of total resin solids in said composition, said flow control additive comprising a stable, crosslinked dispersion containing microgel particles, said dispersion

(i) being formed by addition polymerization of (a) between about 1 and about 10 mole percent each of first and second ethylencially unsaturated monomers, each bearing functionality capable of crosslinking reaction with the other, and (b) between about 80 and about 98 mole pecent of at least one other monoethylenically unsaturated monomer in the presence of (I) a hydrocarbon dispersing liquid which is solvent for the polymerization monomers, but a non-solvent for the resultant polymer, and (II) polymeric dispersion stabilizer containing at least two segments, with one segment being solvated by said dispersing liquid and the other segment being of different polarity than said first segment and relatively insoluble in said dispersing liquid, wherein the reaction is carried out at elevated temperature such that the dispersion polymer first forms and then is crosslinked and

(ii) being stabilized further by inclusion therein of a further stabilizer which, except for solvent, consists essentially of butylated melamine formaldehyde resin having a number average molecular weight in the range of about 700 to about 2,500, said further stabilizer being included in said crosslinked dispersion in an amount ranging from about 25 to about 75 parts of resin solids per 100 parts of total resin solids in said crosslinked dispersion.

4,425,451

EPOXY-PHOSPHATE AQUEOUS DISPERSIONS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Sep. 29, 1982, Ser. No. 428,275
Int. Cl.³ C08G 59/14; C08L 63/00
U.S. Cl. 523—414 14 Claims

1. A water dispersible epoxy-phosphate ester polymer, oxirane-function-free, salt reaction product of (1) a monoester reaction product containing residual epoxy functionality, of (a) a resinous polyepoxide having at least about 1.4 oxirane groups per molecule and (b) less than 0.9 mol of orthophosphoric acid for each oxirane equivalent in the polyepoxide, with (2) at least 1 mol of a volatile amine per equivalent of oxirane functionality in said monoester.

4,425,452

COATING COLOR FOR PAPER AND METHOD FOR PREPARATION OF THE SAME

Kojiro Nakata; Yasunobu Endo, both of Fuji; Akitomo Terada, Shiki; Kazumasa Hayashi, and Michio Kobori, both of Kashiwara, all of Japan, assignors to Sanwa Denpun Industrial Co., Ltd., Kashiwara and Shizuoka Prefecture, Shizuoka, both of, Japan

Filed Oct. 14, 1981, Ser. No. 311,172
Claims priority, application Japan, Oct. 17, 1980, 55-145094
Int. Cl.³ C08L 3/04, 3/00
U.S. Cl. 524—47 14 Claims

1. A coating color for paper, comprising:

100 parts by weight of pigments;

about 1 part to about 50 parts by weight of enzymatically converted dry starch in powder or granule form, which contains 20% or less by weight moisture, 2.0% or less by weight crude protein, 1.0% or less by weight crude fat, 1.0% or less by weight crude fiber, 1.0% or less by weight crude ash, 20% or less by weight dextrose equivalent, and having a viscosity of a 30% by weight content suspension thereof of 3000 cp or less; and

insolubilizers; and water.

4,425,453

ASPHALTIC COMPOSITIONS CONTAINING ALKOXYLATED TERPOLYMERS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed May 21, 1982, Ser. No. 380,636
Int. Cl.³ C08L 31/00
U.S. Cl. 524—69 18 Claims

1. A composition comprising about 60 to about 93 weight percent of asphalt and from about 7 to about 40 weight percent of a terpolymer of ethylene, vinyl acetate or vinyl chloride and an organic acid selected from the group consisting of acrylic, methacrylic and itaconic acids alkoxylated with from about 1 to about 10 weight percent of a material selected from the group consisting of propylene oxide and a mixture of propylene oxide and ethylene oxide wherein the weight percent of propylene oxide in the said mixture is from about 65 to about 95.

11. A composition comprising about 55 to about 93 weight percent of asphalt, about 1 to about 20 weight percent of a synthetic terpenic resin, and from about 6 to about 40 weight percent of a terpolymer of ethylene, vinyl acetate or vinyl chloride and an organic acid selected from the group consisting of acrylic, methacrylic and itaconic acids, alkoxylated with from about 1 to about 10 percent by weight of a material selected from the group consisting of propylene oxide and a mixture of propylene oxide and ethylene oxide wherein the weight percent of propylene oxide in the said mixture is from about 65 to about 95.

4,425,454

ASPHALT/ETHYLENE-VINYL ACETATE COPOLYMER COMPOSITION FOR AIR-BLOWING

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 30, 1982, Ser. No. 454,795
Int. Cl.³ C08L 31/00
U.S. Cl. 524—69 5 Claims

1. An asphalt composition for air-blowing and producing an industrial grade asphalt, comprising asphalt; from about 1 weight percent to about 10 weight percent ethylene/vinyl-acetate copolymer; and from about 0.1 weight percent to about 5 weight percent of an air-blowing asphalt catalyst.

4,425,455

DRILLING FLUIDS BASED ON POWDERED SULFONATED THERMOPLASTIC POLYMERS

S. Richard Turner; Robert D. Lundberg, both of Bridgewater, N.J.; Thad O. Walker, Humble, Tex., and Dennis G. Peiffer, East Brunswick, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,945
Int. Cl.³ C08K 5/01, 3/30; C09K 7/02
U.S. Cl. 524—158 14 Claims

1. An oil-based drilling mud which comprises:
(a) an organic liquid substantially immiscible in water;
(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the organic liquid;
(c) about 20 to about 50 lb/bbl. of an emulsifier and/or emulsifier package;
(d) weighting material necessary to achieve the desired density; and
(e) about 0.25 to about 4 lb/bbl. of a powdered sulfonate-containing styrene polymer having a particle size range of about 0.1 to 10.0 μm, said powdered sulfonate-containing polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of the neutralized sulfonate-containing styrene polymer.

4,425,456

COPOLYCARBONATES BASED ON BIS(4-HYDROXYPHENYL)BIPHENYL DISULFONE

Arthur L. Baron, New Martinsville, W. Va.; Sivaram Krishnan, Moers, Fed. Rep. of Germany; Mark W. Witman, and Roger J. White, both of New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1981, Ser. No. 306,046
Int. Cl.³ C08G 63/62
U.S. Cl. 524—165 9 Claims

6. A thermoplastic aromatic polycarbonate molding composition comprising a blend of
(i) the product of a reaction comprising
(a) at least one aromatic diphenol selected from the group consisting of 2,2-bis-(4-hydroxyphenyl)-propane, 2,2-bis-(3,5-dimethyl-4-hydroxyphenyl)-propane, 2,2-bis-(3,5-dichloro-4-hydroxyphenyl)-propane, 2,2-bis-(3,5-dibromo-4-hydroxyphenyl)-propane and 1,1-bis-(4-hydroxyphenyl)-cyclohexane,
(b) bis(4-hydroxyphenyl)biphenyl disulfone and
(c) a member selected from the group consisting of carbonyl bromide, phosgene, bischloroformic esters of (a) or (b) and diaryl carbonates and
(ii) about 0.1 to 1 percent of an organic acid salt, said percent being relative to the weight of said product of a reaction.

4,425,457

HIGH GLOSS POLYETHYLENE TEREPHTHALATE REINFORCED RESIN COMPOSITIONS

John Christiansen, Plainfield, and Shau-zou Lu, Whitehouse Station, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 175,565, Aug. 6, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,367
Int. Cl.³ C08K 3/26, 3/34
U.S. Cl. 524—293 22 Claims

1. A composition consisting essentially of:
a. from about 40 to about 95% by weight of polyethylene terephthalate having an inherent viscosity of at least 0.4;
b. from about 4 to about 65% by weight of a substance selected from the group consisting of a reinforcing agent; a filler material; and a blend of a reinforcing agent and filler material; and
c. from about 0.1 to about 25% by weight of an alkali metal salt having an anion selected from the group consisting of an oxide of germanium, tin, lead and combinations thereof.

10. A method of producing molded, reinforced polyethylene terephthalate articles which comprises:
(1) employing a polyethylene terephthalate resin composition consisting essentially of:
(a) from about 40 to about 95% by weight of polyethylene terephthalate having an inherent viscosity of at least 0.4;
(b) from about 4 to about 65% by weight of a substance selected from the group consisting of a reinforcing agent; a filler material; and a blend of a reinforcing agent and filler material; and
(c) from about 0.1 to about 25% by weight of an alkali metal salt having an anion which is an oxide of an element from Group IV of the periodic table; and
(2) molding said resin composition at a temperature between about 70° and about 110° C. sufficient to produce a molded polyethylene terephthalate article having a heat distortion temperature of at least 220° C. and a gloss value of at least about 15.

4,425,458

POLYGUERBET ALCOHOL ESTERS

Robert A. Lindner, Weehawkan, and Anthony O'Lenick, Fairlawn, both of N.J., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Apr. 9, 1982, Ser. No. 366,960
Int. Cl.³ C08K 5/11
U.S. Cl. 524—314 8 Claims

1. A polycarbonate resin composition containing an effective amount of a mold release agent which is a diester of a (a) guerbet alcohol and (b) a member selected from the source group consisting of a dicarboxylic acid containing from 4 to 10 carbon atoms and mixtures thereof and where the guerbet alcohol contains a total of from about 16 to about 40 carbon atoms.

4,425,459

HIGH IMPACT POLY(P-METHYLSTYRENE)

Robert A. Fletcher, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1982, Ser. No. 452,593
Int. Cl.³ C08K 5/06
U.S. Cl. 524—371 6 Claims

1. A process for preparing an impact improved styrenic polymer which comprises:
(a) thermally polymerizing a solution of (i) a thermoplastic elastomeric block copolymer and (ii) a non-thermoplastic diene elastomer dissolved in (iii) a monomer feed in which the sole polymerizable monomer component essentially of p-methylstyrene, the weight proportions of elastomers (i) and (ii) to monomer (iii) being about 3 to about 25 parts elastomers (i) and (ii) in, respectively, about 97 to about 75

parts monomer (iii), at a temperature in the range of from about 90° C. to about 200° C., with agitation until the reaction mixture has undergone phase inversion, for a time sufficient to polymerize substantially all of the p-methylstyrene;

(b) removing any residual monomer, to yield an interpolymer containing discrete gelled rubber particles.

4,425,460

AMINE TERMINATED POLYALKYLENE OXIDE NEUTRALIZED SULFONATED THERMOPLASTIC POLYMERS

Henry S. by Makowski, deceased, late of Scotch Plains, N.J. (by Patricia Helen Makowski, executrix); Robert D. Lundberg, Bridgewater, and Pawan K. Agarwal, Westfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 15, 1981, Ser. No. 264,021

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ C08F *8/30, 8/36*

U.S. Cl. 525—380 **6 Claims**

1. A neutralized sulfonated thermoplastic polymer comprising a sulfonated thermoplastic polymer having about 5 to about 300 meq. sulfonate groups per 100 grams of said neutralized sulfonated polymer, said sulfonated groups being neutralized with an n-polyalkylene oxide substitute amine, wherein said thermoplastic polymer is derived from a polymer selected from the group consisting of polystyrene, poly-t-butyl styrene, polyvinyl toluene and poly-alpha-methyl styrene.

4,425,461

DRILLING FLUIDS BASED ON A MIXTURE OF A SULFONATED THERMOPLASTIC POLYMER AND A SULFONATED ELASTOMERIC POLYMER

S. Richard Turner; Robert D. Lundberg, both of Bridgewater; Warren A. Thaler, Aberdeen, all of N.J.; Thad O. Walker, Humble, Tex., and Dennis G. Peiffer, East Brunswick, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,936

Int. Cl.³ C08K *3/24;* **C08L** *25/08;* **C09K** *7/02*

U.S. Cl. 524—400 **24 Claims**

1. An oil-based drilling mud which comprises:

(a) an organic liquid immiscible with water;

(b) about 1 to about 20 parts by weight of water per 100 parts by weight of the organic liquid;

(c) about 20 to about 50 lb/bbl. of emulsifier;

(d) weighting material necessary to achieve the desired density; and

(e) about 0.25 to about 4.0 lb/bbl. of a mixture of a water insoluble neutralized sulfonated thermoplastic polymer and a water insoluble neutralized sulfonated elastomeric polymer, said neutralized sulfonated thermoplastic and elastomeric polymers each having about 5 to about 100 meq. of sulfonate groups per 100 grams of the neutralized sulfonated thermoplastic or elastomeric polymer.

4,425,462

DRILLING FLUIDS BASED ON SULFONATED ELASTOMERIC POLYMERS

S. Richard Turner; Robert D. Lundberg, both of Bridgewater, N.J., and Thad O. Walker, Humble, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,937

Int. Cl.³ C08K *3/24;* **C08L** *25/08;* **C09K** *7/02*

U.S. Cl. 524—400 **15 Claims**

1. An oil-based drilling mud which comprises:

(a) an organic liquid substantially immiscible with water;

(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the organic liquid;

(c) about 20 to about 50 lb/bbl. of emulsifier;

(d) weighting material necessary to achieve the desired density; and

(e) about 0.25 to about 4.0 lb/bbl. of a water insoluble neutralized sulfonated elastomeric polymer, said neutralized sulfonated elastomeric polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of the neutralized sulfonated elastomeric polymer, wherein said sulfonated elastomeric polymer is selected from the group consisting of copolymers of isoprene/sodium styrene sulfonate butadiene/sodium styrene sulfonate, chloroprene/sodium styrene sulfonate and terpolymers of isoprene/sodium styrene sulfonate/styrene and butadiene/-sodium styrene sulfonate/styrene.

4,425,463

DRILLING FLUIDS BASED ON A MIXTURE OF SULFONATED THERMOPLASTIC POLYMER AND AN AMINE-TREATED CLAY

Thad O. Walker, Humble, Tex.; S. Richard Turner; Robert D. Lundberg, both of Bridgewater, N.J.; Warren A. Thaler, Aberdeen, N.J., and Dennis G. Pfeiffer, East Brunswick, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,934

Int. Cl.³ C08K *3/24, 3/34;* **C08L** *25/08;* **C09K** *7/02*

U.S. Cl. 524—400 **18 Claims**

1. An oil-based drilling mud which comprises:

(a) an organic liquid immiscible with water;

(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the organic liquid;

(c) about 20 to about 50 lb/bbl. of emulsifier;

(d) weighting material necessary to achieve the desired density;

(e) about 0.25 to about 4.0 lb/bbl. of water insoluble neutralized sulfonated thermoplastic polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of the neutralized sulfonated thermoplastic polymer; and

(f) about 1 to about 10 lb/bbl. of an amine-treated clay.

4,425,464

NEUTRALIZING POLYETHYLENE CATALYST RESIDUES

James A. Allen, Lake Jackson, and Randall S. Shipley, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 20, 1982, Ser. No. 380,180

Int. Cl.³ C08F *6/02;* **C08K** *5/09*

U.S. Cl. 524—400 **32 Claims**

1. In a process for neutralizing transition metal-containing catalyst residues wherein a polymer containing such catalyst residues is contacted with a quantity of a neutralizing agent; the improvement which comprises employing as said catalyst neutralizing agent the product resulting from

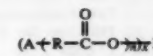
(A) reacting at a temperature of from about 0° C. up to the decomposition temperature of the reaction product, a composition comprising

(1) at least one saturated or unsaturated hydroxyl-containing mono- or polycarboxylic acid having from about 3 to about 20 carbon atoms per molecule; and

(2) at least one saturated or unsaturated mono- or polycarboxylic acid free of hydroxyl-groups and having from about 6 to about 30 carbon atoms per molecule; wherein components (A-1) and (A-2) are present in quantities which provides a molar ratio of (A-2):(A-1) of from about 0:1 to about 10:1, and subsequently

(B) reacting acid groups of the reaction product with a neutralizing compound or mixture of such compounds containing at least one metal from Groups IA, IIA or IIB of the Periodic Table.

14. A polymer which has been prepared by polymerizing one or more polymeriable α-olefins or a mixture of one or more polymerizable α-olefins and at least one polymerizable ethylenically unsaturated monomer in the presence of a supported or unsupported transition metal-containing catalyst, said polymer containing residues of said catalyst and wherein said residues of said catalyst have been neutralized by contacting said catalyst with a neutralizing quantity of a catalyst neutralizing agent which is at least one compound represented by the formula



wherein each R is independently a hydrocarbyl group having from about 1 to about 20 carbon atoms, A is independently a hydroxyl group or a group represented by the formula

wherein each R' is independently a hydrocarbyl group having from about 5 to about 29 carbon atoms, M is a metal from Groups IA, IIA or IIB of the Periodic Table or a Lewis base; n has a value from 1 to about 10; and x has a value corresponding to the valence of the metal M or Lewis base.

4,425,465

AQUEOUS COATING COMPOSITIONS

John C. Padget, Frodsham; Kevin T. McAloon, Appleton Thorn, and Anthony J. Burgess, Frodsham, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Sep. 7, 1982, Ser. No. 415,543

Claims priority, application United Kingdom, Sep. 14, 1981, 8127700

Int. Cl.³ C08K *3/34, 3/10;* **C08L** *27/06;* **C09D** *5/18*

U.S. Cl. 524—450 **18 Claims**

1. An aqueous coating composition comprising a dispersion of an inorganic material in an aqueous solution or dispersion of a film-forming polymeric binder, characterised in that the inorganic material comprises vermiculite in the form of lamellae obtained by treating vermiculite with chemicals, swelling the treated vermiculite in water and applying shear to the swollen vermiculite in water to produce an aqueous suspension of tiny particles of thickness less than 1 micron.

4,425,466

COATING COMPOSITIONS COMPRISING A METHYLATED METHYLOLATED MELAMINE

J. Owen Santer, East Longmeadow, and George T. Spitz, Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 9, 1981, Ser. No. 300,548

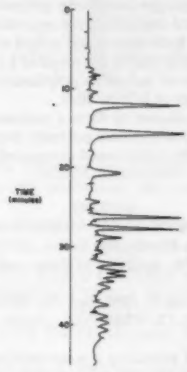
Int. Cl.³ C08L *61/28*

U.S. Cl. 524—512 **4 Claims**

1. A coating composition comprising:

(A) a methylated methylolated melamine composition wherein the combined formaldehyde content is in the range of about 2.4 to about 3.2 moles per mole of melamine and the combined methanol content is in the range of about 2.3 to about 3.0 moles per mole of melamine and about 0.7 to about 1.0 mole per mole of combined formaldehyde, characterized by having a first liquid chromatographic elution ratio in the range of about 0.1 to about 1.5 and a second liquid chromatographic elution ratio in the range of about 0.2 to about 1.1, and an oligomer content of no more than 70 percent by weight; and

(B) a polyfunctional compound wherein on average there are at least two functional groups per molecule, selected from the group consisting of carboxy groups, hydroxy



groups, primary and secondary amide groups and urethane groups, wherein the functional groups are present in an amount at least about 2 and not more than 20 percent by weight of the polymer;

wherein the weight ratio of methylated methylolated melamine to polyfunctional compound is in the range of about 1:19 to about 3:2.

4,425,467

METHOD OF PREPARING ELECTROPHORETTABLE POLYMER EMULSIONS

William M. Alvino, Penn Hills, and Timothy J. Fuller, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1982, Ser. No. 342,029

Int. Cl.³ C08L *81/06, 79/08;* **C08J** *3/08*

U.S. Cl. 524—600 **12 Claims**

1. A method of making a non-aqueous emulsion from which a polymer can be electrodeposited comprising:

(A) preparing a mixture about 50 to about 150 parts by weight of a non-aqueous organic non-electrolizable nonsolvent for said polymer with about 0.8 to about 1.2 parts by weight of a nitrogen-containing base, selected from the group consisting of tertiary amines, imidazoles, and mixtures thereof,

(B) adding to said mixture a solution of about 0.5 to about 5% solids containing 1 part by weight of said polymer, said polymer being selected from the group consisting of polyamic acids, polyamide-imides, polyimides, polyparabanic acids, polysulfones, and mixtures thereof, in a nonaqueous, organic, non-electrolizable, aprotic solvent.

4,425,468

POLYUREA-POLYURETHANE ACRYLATE POLYMER DISPERSIONS

Joseph M. Makhlouf, Mars; Gregory J. McCollum, Glenshaw, and Paul R. Kerr, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 31, 1981, Ser. No. 336,226

Int. Cl.³ C08G *18/12, 18/32*

U.S. Cl. 524—710 **39 Claims**

1. A process for preparing a polymerizable ethylenically unsaturated urea-urethane polymer dispersed in a polymeriz-

able ethylenically unsaturated compound, which comprises reacting a polyisocyanate, at least a portion of which is a diisocyanate, with a polyfunctional amine containing primary and/or secondary amino groups in the presence of:

(a) a polyol, at least a portion of which is a polymeric polyol, free of ethylenic unsaturation,

(b) a diluent which is an ethylenically unsaturated compound free of active hydrogens, and

(c) an active hydrogen-containing polymerizable ethylenically unsaturated compound, the equivalent ratio of isocyanate to active hydrogen in said polyol and said polyfunctional amine being within the range of 1.1 to 2.0/1 and the equivalent ratio of polyol to polyfunctional amine being within the range of 0.75 to 20/1,

under conditions sufficient to form a polymerizable ethylenically unsaturated urea-urethane polymer dispersed in a polymerizable ethlenically unsaturated compound.

4,425,469

POLYACRYLAMIDE FLOW MODIFIER-ADSORBER

William D. Emmons, Huntingdon Valley, and Travis E. Stevens, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 8, 1980, Ser. No. 185,080
Int. Cl.³ C08F *2/16, 120/56*
U.S. Cl. 524—750 **22 Claims**

1. In a method of preparing a water-soluble addition polymer of acrylamide and 0–50% by weight of one or more other vinyl monomers, the improvement wherein there is employed a substantially water-insoluble molecule, having an effective hydrophobe group, as a free radical initiator, a chain transfer agent or a component of the initiator or the agent; the polymer having a weight average molecular weight greater than 10,000 and being prepared by a solution polymerization process.

4,425,470

ALKALI METAL SALTS OF LOW MOLECULAR WEIGHT POLYETHYLENE TEREPHTHALATE AS NUCLEATING AGENTS FOR POLYETHYLENE TEREPHTHALATES

Dana S. Garcia, Lincoln University, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1982, Ser. No. 405,758
Int. Cl.³ C08L *67/02*
U.S. Cl. 525—444 **5 Claims**

1. A method for nucleating polyethylene terephthalate comprising melt-blending polyethylene terephthalate with a nucleating agent comprising an alkali metal salt of ethylene terephthalate oligomer, the method characterized by forming the nucleating agent outside of contact with the polyethylene terephthalate to be nucleated, wherein the nucleating agent has an inherent viscosity of at least about 0.1 dl/g, and a number-average molecular weight of at least about 1000, and wherein an individual molecule of the nucleating agent has the general formula

$$M\text{—}OOC\text{—}C_6H_4\text{—}COOCH_2CH_2\text{—}_nOOC\text{—}C_6H_4\text{—}X$$

wherein M is an alkali metal, X is —COOM or $-CH_2CH_2OH$, and n is about 2 to 130.

4,425,471

NOVEL CYANOACRYLATE ADHESIVE COMPOSITIONS AND METHODS OF BONDING

George H. Millet, Oakdale, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Apr. 23, 1981, Ser. No. 256,860
Int. Cl.³ C08F *236/12*
U.S. Cl. 526—298 **4 Claims**

1. An adhesive composition comprising:

(a) 100 parts by weight of an alpha-cyanoacrylate selected from the group consisting of ethyl cyanoacrylate, n-propyl cyanoacrylate, isopropyl cyanoacrylate, n-butyl cyanoacrylate and allyl cyanoacrylate; and

(b) about 15 to 35 parts by weight of an alkyl 2-cyanopenta-2,4-dienoate selected from the group consisting of methyl 2-cyanopenta-2,4-dienoate and ethyl 2-cyanopenta-2,4-dienoate.

4,425,472

RADIATION-CURABLE COMPOSITIONS

Dennis D. Howard, Girard, and Frederick H. Sexsmith, Erie, both of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jun. 22, 1981, Ser. No. 276,217
Int. Cl.³ C08F *2/50*
U.S. Cl. 526—301 **4 Claims**

1. A method for reducing the viscosity of 100 percent reactive radiation-curable compositions containing at least one olefinically unsaturated polymeric material, said compositions being substantially water-free; said olefinically unsaturated polymeric material being substantially water-insoluble and inert with respect to water, said olefinically unsaturated polymeric material comprising the reaction product of

I. at least one organic isocyanate compound characterized by the presence of at least two reactive isocyanate groups;

II. from about 30 to 100 mol percent of at least one polymeric material characterized by the presence of at least two isocyanate-reactive active hydrogen groups;

III. from about 70 to 0 mol percent of at least one monomeric chain-extending compound characterized by the presence of at least two isocyanate-reactive active hydrogen groups; and

IV. at least one addition-polymerizable unsaturated monomeric compound having a single isocyanate-reactive active hydrogen;

the mol percents of (II) and (III) being based on total mols of (II) and (III);

said isocyanate compounds (I) being present in an amount sufficient to provide an NCO:active hydrogen ratio greater than 1:1, preferably at least 1.05:1, and more preferably in the range 2.3–5:1 with respect to the active hydrogen groups of (II) and (III); and

said addition-polymerization unsaturated monomeric compound (IV) being present in an amount sufficient to provide at least one mol or equivalent of active hydrogen group per mol of available isocyanate moiety; said method comprising incorporating into such composition water in an amount insufficient to form a water-in-oil emulsion.

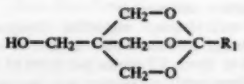
4,425,473

POLYMERIZABLE BICYCLIC ORTHOESTER COMPOUNDS

Kiyokazu Mizutani, Inazawa, and Takahisa Ogasawara, Tohkai, both of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,537
Claims priority, application Japan, Feb. 4, 1980, 55-11432; Feb. 4, 1980, 55-11433; May 30, 1980, 55-71333
Int. Cl.³ C07D *319/14*
U.S. Cl. 549—363 **19 Claims**

1. A bicyclic orthoester compound of the formula



(Ia)

wherein R_1 is an alkyl containing 1 to 4 carbon atoms.

4,425,474

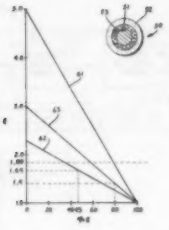
PULP-INSULATED CONDUCTOR CABLE

Helmut E. Durr, Dunwoody, and Charles B. Heard, Jr., Lawrenceville, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 117,164, Jan. 31, 1980, abandoned. This application Oct. 27, 1981, Ser. No. 315,376

Int. Cl.³ H01B *3/48*

U.S. Cl. 174—110 F 11 Claims



1. A pulp-insulated conductor cable which has a predetermined mutual capacitance, said cable comprising:

a plurality of pairs of pulp-insulated conductors, each of said pulp-insulated conductors comprising:

an elongated metallic conductor; and

an insulation cover enclosing said metallic conductor and comprising:

a layer of pulpous material which is sustantially concentrically disposed about said metallic conductor, and which has a moisture content and a density that are effective to cause at least a predetermined minimum distance to be maintained between said metallic conductors of each of said pairs; and

a coating of an adhesive material which is interposed between said metallic conductor and said layer of pulpous material to bond said layer of pulpous material to said metallic conductor with at least a predetermined adhesion and which has a thickness relative to the thickness of said layer of pulpous material that is effective to control the dielectric constant of said insulation cover, said layer of pulpous material having a weight per foot which is substantially less, a density which is substantially greater and a thickness which is substantially less than the weight per foot, density and thickness of a layer of pulpous material which encloses each of a plurality of uncoated metallic conductors that comprise a cable having the predetermined material capacitance; and

a jacket which is made of a plastic material and which encloses said plurality of pairs of pulp-insulated conductors.

4,425,475

HIGH-STRENGTH FLEXIBLE TWIN-LEAD CABLE

Robert E. Ward, Aurora, Ill.; James A. Lasley, and John C. Young, both of Richmond, Ind., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 28, 1981, Ser. No. 305,838

Int. Cl.³ H01B *7/08*

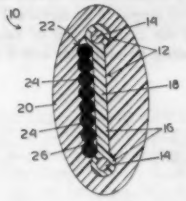
U.S. Cl. 174—117 F 10 Claims

1. An electrical cable comprising:

at least two conductor wires, said wires being parallel and spaced from one another;

an inner jacket encasing said conductor wires and forming a webbing therebetween;

a flat, unitary ribbon composed of a plurality of interconnected high-strength textile fibers disposed against one side of the webbing, said ribbon having a width approximately equal to the width of said webbing, said ribbon extending longitudinally of the cable; and



an outer sheath extending longitudinally of said cable and surrounding said conductors, said inner jacket, and said ribbon.

4,425,476

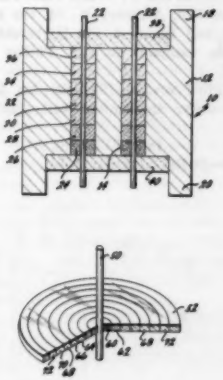
PROGRESSIVELY FUSED CERAMIC SEALS BETWEEN SPACED MEMBERS SUCH AS A TERMINAL PIN AND A FERRULE

James C. Kyle, 24372 Via San Clemente, Mission Viejo, Calif. 92692

Filed Apr. 6, 1981, Ser. No. 251,512

Int. Cl.³ H01B *17/26;* C03C *27/02, 3/22*

U.S. Cl. 174—152 GM 23 Claims



10. In combination,

a ferrule,

a terminal pin disposed in spaced relationship to the ferrule, and

insulating means constituting a ceramic with partially amorphous and partially polycrystalline characteristics and disposed between the terminal pin and the ferrule and hermetically sealed to at least a particular one of the terminal pin and the ferrule, the insulating means having a progressively increased temperature of fusion to the ferrule and the terminal pin at progressive positions.

4,425,477

TELEPHONE LINE TRIGGERED ATTENUATOR

Paul A. Magil, Long Beach, Calif., assignor to Paul Alan Magil & Associates, Costa Mesa, Calif.

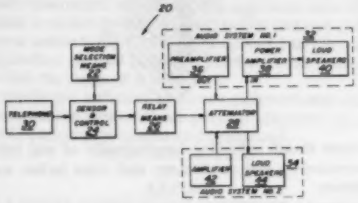
Filed Feb. 8, 1982, Ser. No. 346,435

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 B 12 Claims

1. A device for direct connection to a conventional telephone line at any point thereon, said telephone line forming a

part of a telephone system including a telephone having a handset, said telephone system producing a first electrical signal when said handset is lifted and a second electrical signal when said handset is replaced, said device being arranged for decreasing the audio output of an electrical audio system and without modifying the construction of said telephone, said audio system including an amplifier and a speaker, wherein



said device comprises high impedance isolating means responsive to said first electrical signal and attenuation means responsive to said electrical isolating means for attentuating the audio output of said audio system to a predetermined level until said second signal is produced by said system, whereupon said device automatically restores said audio output to its previous level.

4,425,478

CONFERENCE SYSTEM FOR TELEPHONY

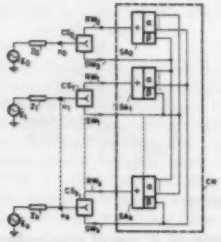
Job F. P. van Mil; Adrianus W. M. van den Enden, both of Eindhoven, and Teunis A. van Harreveld, Hilversum, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,622

Claims priority, application Netherlands, Dec. 1, 1980, 8006519

Int. Cl.³ H04M *3/56*

U.S. Cl. 179—18 BC **2 Claims**



1. A conference system for establishing simultaneous interchange of information among a plurality of participants, comprising a conference circuit for information signals of the conference, a connecting circuit for connecting each participant to the conference circuit, each connecting circuit having an output circuit for transmitting information from a participant to the conference circuit and an input circuit for receiving information from the conference circuit for that participant, the conference circuit being arranged for receiving information signals from the output circuit of each of the connecting circuits and for applying information signals to the input circuit of each of the connecting circuits, each of the information signals applied to the input circuit of each connecting circuit comprising a predetermined proportion α of the algebraic sum of the information signals received from the output circuit of each of the further connecting circuits, and a predetermined proportion β of the information signals from the output circuit of that connecting circuit.

4,425,479

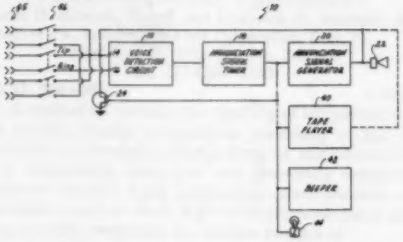
APPARATUS FOR ANNUNCIATING THE COMPLETION OF A TELEPHONE CALL HOLD INTERVAL

Leon H. Dubner, 18915 N.E. 18th Ave., North Miami Beach, Fla. 33179, and Gene R. Spiller, Flushing, N.Y., assignors to Leon H. Dubner, North Miami Beach, Fla.

Filed Feb. 22, 1982, Ser. No. 350,747

Int. Cl.³ H04M *11/02, 1/00*

U.S. Cl. 179—81 B **10 Claims**



1. An apparatus for annunciating the completion of a call hold interval in a telephone communication system to an active party and a passive party, said apparatus comprising in combination:

voice detection circuit means responsive to the presence of a voice signal on the telephone communication line;

an annunciation signal timer;

means for connecting said annunciation timer to said voice detection circuit such that said voice detection circuit actuates said annunciation timer when said voice detection circuit senses the presence of a voice signal on the telecommunication line; and

means for indicating to the active party and to the passive party when said annunciation signal timer has been actuated by said voice detection circuit thereby notifying the passive party that the active party has returned to the line and indicating to the active party that the telecommunication line is still active.

4,425,480

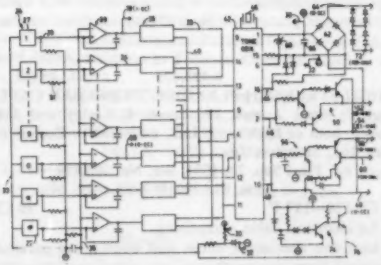
TELEPHONE STATION APPARATUS WITH SELECTIVE RESTRICTING OF LOCAL CALLS

Alan J. Lischin, Lauderdale Lakes, Fla., assignor to Communication Equipment and Engineering Co., Plantation, Fla.

Filed Nov. 20, 1981, Ser. No. 323,194

Int. Cl.³ H04M *1/66*

U.S. Cl. 179—90 D **13 Claims**



1. Telephone station apparatus of the type including a conventional ringer, telephone hand set, hook switch and protective network for handling calls without the use of coins and for use with central office equipment that does not include local call exclusion features, the station apparatus comprising:

means responsive to a user for entering the digits of a call including the numerals 1 through 0 and the symbols * and # and for generating multifrequency tone signalling in response to the entered digits; and

control means responsive to said entering and tone signalling means for restricting entered calls having more than a predetermined number of digits, for allowing calls where the first digit entered is a zero, and for allowing calls having a number of digits equal to or less than said predetermined number, said control means comprising means for counting the number of digits entered and loop control means for controlling the current loop to the central office and through the station apparatus, said digit counting means comprising means for generating a reject control signal when the entered number of digits exceeds said predetermined number, said loop control means being responsive to said reject control means to interrupt the current loop to the central office, said control means further comprising means for disabling said counting means when the first entered digit is the numeral 0 and means for disabling said counting means when the first entered digit is the numeral 1.

4,425,481

PROGRAMMABLE SIGNAL PROCESSING DEVICE

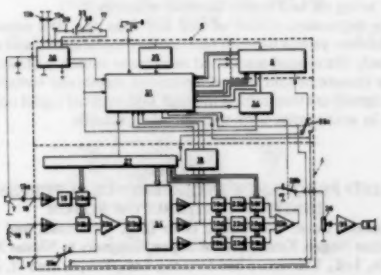
Stephan Mansgold, Rådavägen 82 G, Mölnlycke, Sweden (S-435 00); Arne Leijon, Jungmansgatan 57, Göteborg, Sweden (S-413 11), and Björn Israelsson, Uddevallagatan 35, Göteborg, Sweden (S-416 70)

Filed Apr. 14, 1982, Ser. No. 368,456

Claims priority, application Sweden, Apr. 16, 1981, 8102466

Int. Cl.³ H04R 25/00

U.S. Cl. 179—107 FD **5 Claims**



1. Programmable signal processing device, mainly intended for persons having impaired hearing, and of the kind which include an electronically controlled signal processor, characterized by

that a memory is arranged to store information/data for at least two unique signal processes adjusted to different sound environments/listening situations and that a control unit, manual or automatic, is arranged to transmit information/data, for one of the unique signal processes, from the memory to the signal processor, to bring about one signal process adjusted to a particular sound environment/listening situation.

4,425,482

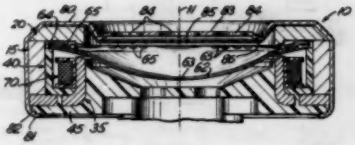
RING ARMATURE ELECTROACOUSTIC TRANSDUCER

Chester M. Bordelon, Shreveport, La.; Richard M. Hunt, Indianapolis, Ind., and Robert A. Wheeler, Shreveport, La., assignors to Western Electric Company, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,937

Int. Cl.³ H04R 9/00

U.S. Cl. 179—120 **11 Claims**



1. A ring armature electroacoustic transducer comprising elements coaxial about a common vertical axis and as follows:

(a) a cylindrical ring magnet with an annular horizontally planar, flat ground upper end face, the material of said magnet comprising an alloy at least 90 percent by weight of which consists of Fe, Cr and Co, with the Cr and Co being present in such 90 percent amount in the respective ranges of 20–40 weight percent of such amount for the Cr and 3–30 weight percent of such amount for the Co,

(b) an upper pole piece in the form of an annular disc with a horizontally planar underside which is ground flat at least at its outer margin, said pole piece being seated at its outer margin on said magnet's upper end face so that the respective ground surfaces thereof are in flat abutting relation over the entire area of said upper end face, and so that said pole piece's underside is normal to the inner wall of said magnet,

(c) a lower pole piece of "L" cross section to one side of said axis in planes therethrough, said lower pole piece having as integral parts thereof (i) a lower radially salient flange contacting at its outer margin the bottom of said magnet, and (ii) an upper annular stem providing by its upper end a lower pole tip spaced vertically downward from the inner margin of said upper pole piece,

(d) a synthetic resinous cylindrical ring armature support disposed with a close fit within said magnet's inner wall and having an upper annular end positioned above said lower pole tip and below said underside of said upper pole piece,

(e) an electrical coil disposed radially between said support and said stem to encircle the latter,

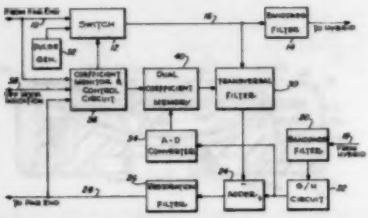
(f) an armature in the form of a mechanically resilient thin annular disc having to one side of said axis in planes therethrough an elongated rectangular cross section with a downward slant in the radially inward direction, said armature being seated at its outer margin on said upper end of support, and said armature having its inner margin interposed between said two pole pieces to be separated from the lower and upper thereof by, respectively a main air gap and an auxiliary air gap, the outer periphery of said armature being separated from the inner wall of said magnet by a small radial air gap, and

(g) an acoustic diaphragm bonded to the top of said armature and separated at its outer margin from said underside of said upper pole piece solely by an axial air gap.

4,425,483
ECHO CANCELLATION USING TRANSVERSAL FILTERS

Pok F. Lee, Richmond, and John A. Bond, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 13, 1981, Ser. No. 310,501
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **13 Claims**



8. An echo canceller, for cancelling echoes on a transmit path of signals on a receive path, comprising:

a transversal filter having an input coupled to the receive path;

means for subtracting output signals of the transversal filter from signals on the transmit path;

means for supplying pulse signals to the receive path, whereby said pulse signals are also supplied to the transversal filter;

means for deriving a set of coefficients for the transversal filter from the impulse response, on the transmit path before the subtracting means, resulting from each pulse signal supplied to the receive path;

first and second storage means each for storing a set of coefficients for the transversal filter;

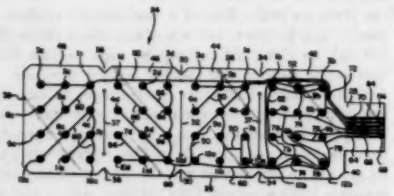
means for comparing the impulse response, on the transmit path after the subtracting means, with a threshold; and

control means for controlling said supplying means to supply a pulse signal to the receive path and for selecting one of said storage means to supply a stored set of coefficients to the transversal filter and the other of said storage means to store the set of coefficients derived from the resultant impulse response, and for interchanging the selection of said storage means and repeating these steps if the comparing means establishes that said threshold is exceeded.

4,425,484
ENCODED KEYBOARD SWITCH

Kazutoyo Fukukura, Reading, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 23, 1981, Ser. No. 285,898
Int. Cl.³ H01M *13/70*
U.S. Cl. 200—5 A **4 Claims**



1. An encoded keyboard switch assembly, said switch assembly being a substantially flat panel-like member having a top surface and having a plurality of key positions on the top surface, the switch assembly being characterized in that:

each of said key positions has a key top and a first associated membrane switch beneath said key top so that depression of said key top closes said first associated membrane switch, each first associated membrane switch having opposed first and second switch contacts, said first switch contacts being commonly connected to a first common external conductor extending from said switch assembly, said second switch contacts having output conductors extending therefrom, said output conductors extending to external signal conductors,

said second switch contacts are selectively connected to each other by encoding conductors in accordance with a predetermined encoding scheme, at least some of said second switch contacts and at least some of said first switch contacts being multi-pole contacts, said multi-pole contacts being preselected to achieve said encoding scheme,

each of said key positions has a second associated membrane switch beneath, and in alignment with, said first associated membrane switch, said second associated membrane switches having third switch contacts which are commonly connected to a second common external conductor,

said second associated membrane switches having fourth contacts which are commonly connected to a common internal conductor, said common internal conductor being commonly connected to said first contacts of said first associated membrane switches,

said switch assembly comprising first, second, third and fourth sections of flexible film, said sections being stacked beneath said top surface with said first section adjacent to said top surface,

each of said first membrane switches being on the opposed surfaces of said first and second sections with said first switch contacts and said first common external conductor being on said first section and with said second switch contacts and said encoding conductors being on said second section,

each of said second membrane switches being on the opposed surfaces of said third and fourth sections with said third switch contacts and said second common external conductor being on said third section, and with said fourth switch contacts and said common internal conductor being on said fourth sections whereby,

upon depression of one of said key tops, the first associated membrane switch beneath said one key top is closed and subsequently the second associated membrane switch is closed, and after closure of said second associated membrane switch, output signals are transmitted through said external signal conductors in accordance with said encoding scheme.

4,425,485
RADIO FREQUENCY INTERFERENCE SUPPRESSING IGNITION DISTRIBUTOR ROTOR

Masazumi Sone, Yokohama; Iwao Imai, Yokosuka, and Hiromitsu Nagae, Katsuta, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Hitachi, Ltd., Tokyo, both of, Japan

Filed Jul. 24, 1981, Ser. No. 286,647
Claims priority, application Japan, Jul. 25, 1980, 55-101263; Jul. 25, 1980, 55-101264; Jul. 25, 1980, 55-101265; May 20, 1981, 56-74867; May 20, 1981, 56-74868
Int. Cl.³ H01H *1/00, 19/00*
U.S. Cl. 200—19 R **36 Claims**

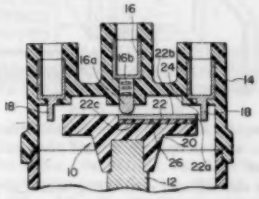
1. An ignition distributor rotor of the type adapted to be rotated about a rotor axis within a distributor cap having a center input terminal and a plurality of output terminals circumferentially disposed about the rotor axis, comprising:

a body member of an electrically insulating material rotatable about the rotor axis;

a rotor output segment of an electrically conductive material supported by said body member and having a portion

adapted to be electrically connected with the center input terminal, said rotor output segment having at least top and bottom flat face surfaces that define, at the extremities thereof nearest said output terminals, the top and bottom edge boundaries of an output tip surface which, when said rotor segment is rotated with said body member, traces a circular path inwardly from the circumferentially disposed distributor cap output terminals by a predetermined distributor gap; and

a layer of a silicone dielectric material fixedly attached to at least a portion of at least one of said top and bottom flat



face surfaces of said rotor segment, the thickness of said layer being at least equal to that of said rotor output segment,

the thermal conductivity of said rotor output segment being sufficiently low enough as to permit a local temperature elevation on said output tip surface when a spark occurs across said distributor gap, said rotor output segment and said silicone dielectric material layer being effective to reduce the breakdown potential magnitude across said distributor gap whereby radiation of radio frequency interference generated by an electrical discharge across said distributor gap is effectively suppressed.

4,425,486

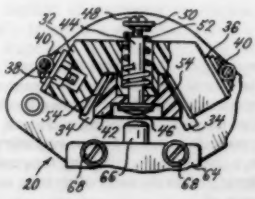
ELECTRICAL RECEPTACLE AND SWITCH

Gray C. Ballman, 30 Portland Dr., Frontenac, Mo. 63131

Filed Jun. 25, 1982, Ser. No. 392,149

Int. Cl.³ H01R *33/30*

U.S. Cl. 200—51 R **9 Claims**



1. An electrical receptacle having means defining at least one blade opening for receiving the blades of an electrical plug, said receptacle having stationary electrical contact surfaces extending at least partially along the length of each blade opening, a movable contact pressure element having at least one flattened surface for juxtaposition with each said stationary contact surface, a post extending between the contact pressure element and the receptacle, and a spring surrounding said post and compressed between the post and the receptacle to bias said movable contact pressure element so that said flattened surfaces are urged against the electrical contact surfaces and movement of the contact pressure element away from the blade openings further compresses the spring.

4,425,487

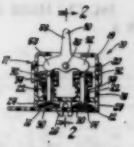
UNITIZED MANUAL ACTUATOR ASSEMBLY FOR UNITIZED ELECTRICAL SWITCH

Shao-Chung Hsieh, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 16, 1982, Ser. No. 418,716

Int. Cl.³ H01H *21/84, 21/24*

U.S. Cl. 200—153 K **2 Claims**



1. A unitized manual actuator assembly for printed circuit board switches and the like comprising:

a base member having a chamber and a pair of integral tube guides disposed in the chamber,

each of said tube guides having an upper open end disposed in the chamber, and a lower open end outside of the chamber,

a pin slideably disposed in each tube guide, each said pin having an integral hollow cap at one end covering the inner open end of its associated tube guide and an opposite end protruding out of the lower open end of the associated tube guide,

a coil spring surrounding each tube guide and engaging the integral hollow cap of the pin slideably disposed in the associated tube guide,

a cover member attached to the base member to form a housing,

a rocker member pivotally mounted in the housing, said rocker member having an operator portion extending through an opening in the cover member and a pair of oppositely extending arms in the housing which engage respective ones of the integral hollow caps so that the pins translate in opposite directions when the rocker is pivoted, and

means on the base member for attaching the unitized manual actuator assembly to a printed circuit board or the like.

4,425,488

PISTOL GRIP CONTROLLER

Jeffrey M. Moskin, 1644 Twentieth St., San Monica Calif. 90404 and Keith J. Wertz, 2533 S. Deegan Dr., Santa Ana, Calif. 92704

Filed Jun. 4, 1982, Ser. No. 384,898

Int. Cl.³ H01H *29/20*

U.S. Cl. 200—220 **9 Claims**

1. A pistol grip controller comprising:

a pistol grip handle;

a tilt switch housing enclosed within said pistol grip handle having sides forming a polygon and a bottom shaped as an inverted pyramid merging upwardly to said sides;

respective separate contacts disposed in the proximity of each of the apexes formed by said sides;

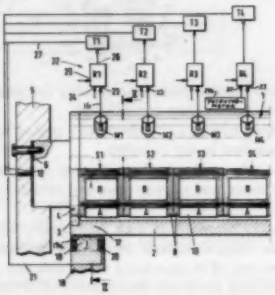
a common contact; and

a movable conductive means for conductively coupling said common contact with one or more of said separate contacts in response to tilting of the pistol grip handle.

4,425,489
ELECTROMAGNETIC HEATING SYSTEM FOR CALENDER ROLLS OR THE LIKE

Josef Pav, Krefeld; H. J. Lauschner, Ratingen, and Peter J. Gaede, Munich, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,742
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033482
Int. Cl.³ H05B *6/14*
U.S. Cl. 219—10.49 A **17 Claims**



1. A roll, particularly a calender roll, comprising a rotary hollow cylindrical shell consisting of ferromagnetic material and having an external surface and an internal surface; and heating means for said shell, including a plurality of groups of electromagnets adjacent to at least one of said surfaces, surrounding the axis of said roll and with the axis of said shell, at least a portion of the external surface of said shell being unobstructed by said electromagnets and each of said groups comprising a plurality of discrete neighboring electromagnets and the neighboring electromagnets of said groups having different polarities and being distributed in the circumferential direction of said shell, each of said electromagnets having a winding and being arranged to induce a magnetic flux in the respective portion of said shell, a source of d-c current for the windings of said electromagnets, adjustable means for regulating the magnetic flux which is induced by the electromagnets of at least some of said groups independently of the magnetic flux induced by the other groups, said regulating means including means for varying the intensity of current which is supplied to said windings, signal generating monitoring means for ascertaining the temperature of a plurality of locations along said external surface, as considered in the axial direction of said shell, and control means having input means connected with said monitoring means and arranged to adjust said regulating means so as to maintain a predetermined pattern of temperature along said external surface.

4,425,490
PROGRAMMABLE ELECTRONIC COOKING APPARATUS

Sadao Takeda, and Yooichi Kyoori, both of Fuji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1981, Ser. No. 322,695
Claims priority, application Japan, Nov. 20, 1980, 55-163926
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **5 Claims**

1. An programmable electronic cooking apparatus comprising:

a food cooking chamber,

an opening for putting food into and taking it out of said chamber,

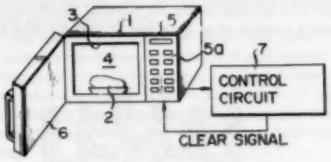
a door provided on said opening,

means for supplying food cooking energy to said chamber,

a cooking switch,

means, coupled to said cooking switch, for controlling said energy supply means so that cooking of food can proceed according to a programmed cooking operation,

means for detecting whether said door is opened during a cooking operation and for interrupting the execution of the programmed cooking operation;



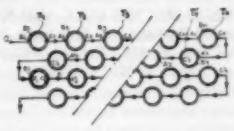
timer means for measuring time elapsed from a re-closure of the door after an opening thereof during a cooking operation; and

means for causing said controlling means to (a) execute the remaining programmed cooking operation interrupted by a door opening, if said cooking switch is operated during a predetermined period of time measured by said timer means, and (b) to clear the remaining programmed cooking operation if the period of time has been elapsed without operation of said cooking switch.

4,425,491
METHOD OF AUTOMATIC WELDING

Michel Batistoni, Dracy-le-Fort, and Alain Georges, Verdun sur le Doubs, both of France, assignors to Framatome, Courbevoie, France

Filed Aug. 10, 1981, Ser. No. 291,677
Claims priority, application France, Aug. 19, 1980, 80 18124
Int. Cl.³ B23K *9/225*
U.S. Cl. 219—60.2 **2 Claims**



1. Method of welding to a tube sheet the ends of a plurality of tubes aligned in several parallel rows, by means of an automatic welding apparatus comprising a welding torch and automatically controlled means for displacing said torch, along two substantially perpendicular axes, in a plane trajectory comprising, for each tube, a circular path following the contour of the tube, and a rectilinear path to the succeeding tube, said method comprising the steps of

(a) positioning said torch at the side and on the axis of a first of said parallel rows;

(b) striking an arc;

(c) displacing said torch along said axis as far as a point A_1 positioned on the contour of a first tube to be welded;

(d) effectuating a timed stationary preheat at said point A_1;

(e) making a bead by following the entire said contour and going past said point A_1 as far as a point B_1 where the applied current is diminished to partially fade out said arc;

(f) displacing said torch, with its arc faded out, by following said contour as far as a point C_1 diametrically opposite point A_1, then along said axis of said first row as far as point A_2 positioned on the contour of a second tube of said row;

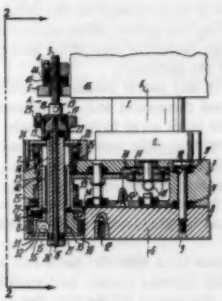
(g) effecting welding in the same manner as far as a point B_2;
(h) displacing said torch, with the arc faded out, as far as a point C_3 on the axis of said first row, and so on as far as the last tube T_n of said first row;
(i) displacing said torch, its arc faded out, along said bead as far as a point C_n;
(j) effecting displacement of said torch onto the axis of a second of said rows, then along said axis to a point A'_1 positioned on the outer tube of said second row; and
(k) effecting welding of the tubes in said second and succeeding rows in the same manner.

4,425,492

ELECTRICAL DISCHARGE MACHINING METHOD WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES

Georges Wyss, Niederrohrdorf, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Continuation of Ser. No. 921,784, Jul. 3, 1978, Pat. No. 4,243,863, which is a division of Ser. No. 696,712, Jun. 16, 1976, Pat. No. 4,104,500, and Ser. No. 696,713, Jun. 16, 1976, Pat. No. 4,104,501. This application Oct. 21, 1980, Ser. No. 199,350
Claims priority, application Switzerland, Jun. 18, 1975, 7932
The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.
Int. Cl.³ B23K 9/16
U.S. Cl. 219—69 M **7 Claims**



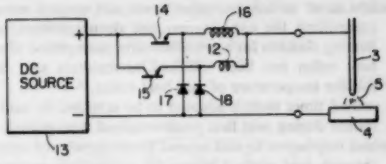
1. In a method of machining by electrical discharges the surfaces of a recess in a workpiece electrode to substantially the same shape as a tool electrode, said method comprising controlling the relative displacements of the electrodes which are translationally movable relative to one another both in the direction of an axis of penetration of one electrode into the other and in a plane perpendicular to said axis and displacing one of the electrodes along said axis of penetration to produce sparking in a machining zone comprised between corresponding surfaces of said electrodes, said machining zone extending on frontal and lateral portions of said surfaces, the improvement comprising displacing one of the electrodes relative to the other in the direction of said axis of penetration only up to a predetermined limit of penetration, subsequently simultaneously relatively moving the electrodes in translation in said perpendicular plane with a predetermined amplitude, and progressively increasing said amplitude as a function of the penetration along said axis to provide a combined oblique relative translational movement to maintain given sparking conditions in the machining zone comprised between said electrodes at said frontal and lateral portions of said surfaces, wherein the amplitude of said relative translational movement in said plane increases linearly with the penetration along said axis whereby said oblique relative translational movement is along a generatrix of a cone coaxial to said axis of penetration.

4,425,493

PULSE ARC WELDING MACHINE

Takaji Mizuno; Masanori Mizuno, both of Aichi; Hirotsugu Komura; Shigeo Usuguri, both of Hyogo, and Youichiro Tabata, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,530
Claims priority, application Japan, Jul. 8, 1980, 55-93075
Int. Cl.³ B23K 9/09
U.S. Cl. 219—130.51 **4 Claims**



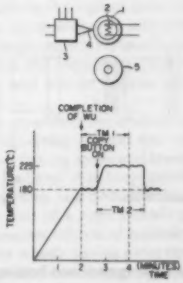
1. A pulse arc welding machine comprising:
a single direct current source;
pulse peak current supplying circuit means connected in series with an arcing region between an electrode and a material to be welded between output terminals of said single direct current source, said pulse peak current supplying circuit means comprising a series circuit of a first inductive element and a first switching element coupled to be operated by a first control signal for supplying a pulse peak current to said arcing region; and
base current supplying circuit means connected in parallel with said pulse peak current supplying circuit means and being supplied input current from only said single direct current source, said base current supplying circuit means comprising a series circuit of a second inductive element and a second switching element coupled to be operated by a second control signal for supplying base current to said arcing region for sustaining an arc in said arcing region between pulses of said pulse peak current.

4,425,494

HEAT ROLLER FIXING UNIT

Masayuki Enomoto, and Kiyoshi Kanai, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,533
Claims priority, application Japan, Jun. 30, 1980, 55-91632[U]
Int. Cl.³ H05B 1/02
U.S. Cl. 219—216 **3 Claims**



1. In an electrostatic recording apparatus of the type in which a toner image is impressed upon a transfer medium and fixed thereon to provide copies by passing said medium between the heat roller having a feeding element to provide a normal fixing temperature, and a pressure roller, and in which

said recording apparatus includes a main power switch and a copy button for initiating the copying action, the improvement comprising

means detecting the heat on the surface of said heat roller,

control means responsive to said detecting means for energizing or deenergizing said heating element to maintain a desired surface temperature of said heat roller,

means responsive to actuation of said main power switch operating through said control means for energizing said heating element to warm up said heat roller to said desired surface temperature,

a first timer switch operative upon said control means for controlling the energization and deenergization of said heating element for a predetermined time period after said heat roller has been warmed to maintain said desired surface temperature of said heat roller,

a second timer switch adapted to be actuated by said copy button during said first predetermined time period,

means responsive to said second timer switch and operating through said control means for controlling energization and deenergization of said heating element to produce on the surface of said heat roller for a second predetermined time period of a duration sufficient to include the fixing and copying operations, a temperature higher than said first desired temperature, and

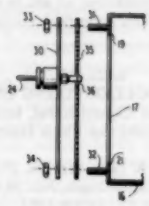
means deactivating said second timer switch at the expiration of said second predetermined time period.

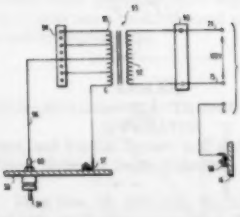
4,425,495

IGNITOR AND ENCLOSURE STRUCTURE

Marcus P. Cake; Harry W. Falter, both of Rocky Mount; Clement W. Batchelor, Spring Hope, and Michael A. Guarini, Rocky Mount, all of N.C., assignors to Morrison-Knudsen Company, Inc., Boise, Id.

Filed Dec. 10, 1982, Ser. No. 448,816
Int. Cl.³ F23Q 7/22
U.S. Cl. 219—267 **6 Claims**





1. In combination, gas ignitor and housing structure characterized by high-strength structural integrity and lightweight construction with hermetic sealing of a limited access enclosure to provide for reliable electrical operation of said ignitor over extended periods under adverse environmental conditions of pressure, temperature, nuclear radiation and moisture, said housing structure being adapted for surface mounting on a containment wall, such as a nuclear reactor containment structure,

a unitary main body formed from stainless steel sheet metal free of internal and external structural bracing,

said main body including

a back wall, and sidewall means extending from the back wall so as to define an enclosure with a single open end spaced from said back wall,

flange means extending in angled relationship from the sidewall means inwardly of said enclosure about the full periphery of the sidewall means circumscribing said open end to define an access opening in a plane spaced from and parallel to the back wall,

said access opening having an area enabling hand placement of electrical transformer circuit elements and interconnection thereof,

a plurality of studs extending outwardly in relation to said open-ended enclosure and predeterminedly distributed about the external surface of said flange means circumscribing said access opening,

said studs being secured to the external surface of the flange means so as to preclude passage of gas therethrough,

stud fastener means for coacting with and longitudinal movement along said studs,

gasket means substantially coextensive dimensionally with said flange means,

a unitary stainless steel sheet metal cover plate substantially coextensive dimensionally with said gasket means,

said gasket means and cover plate defining apertures predeterminedly distributed contiguous to the periphery of said gasket means and cover plate, said apertures corresponding in location and number to the studs on said flange means enabling said gasket means and cover plate to overlay said flange means for closing the access opening at the open end of the enclosure,

said apertures in said gasket means and cover plate having a cross-sectional dimension and configuration conforming to that of the studs so as to be in closely interfitted relationship providing only nominal clearance for assembly purposes when said gasket means and cover plate are placed over said access opening with a stud passing through each said aperture when said gasket means and cover plate means are in sealing relationship to said access opening,

means contiguous to at least the distal end of each stud for receiving stud fastener means, said means providing for longitudinal movement of the stud fastener means laong the studs to uniformly apply sealing pressure through said cover plate to said gasket means securing the cover plate means with intermediate gasket means around the full periphery of the access opening providing a gas-tight hermetic seal of said access opening with the cover plate and sidewall means being interlocked so as to jointly absorb forces tending to configurationally distort either said cover plate or sidewall means,

a glow plug having an ignitor glow probe,

said cover plate including p1 a single sealable opening centrally located in said cover plate for passage and disposition of said probe externally of the enclosure,

line voltage electrical conductors,

a single sealable opening in the sidewall means of the main body for passage of the line voltage electrical conductors from externally of the enclosure to internally thereof,

means for sealing said single opening in the cover plate about said probe,

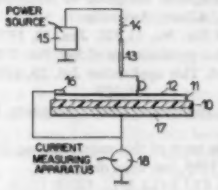
means for sealing said single opening in the sidewall means about said electrical conductors, and

electrical transformer circuit means supported on an internal surface of said main body for connection to the line voltage electrical conductors internally of the enclosure to provide electrical power at a selected voltage level to said probe.

4,425,496
REMOVAL OF METAL COATING FROM DIELECTRIC MATERIAL

Daniel le Fur; Robert Haug, and Max Goldman, all of Gif sur Yvette, France, assignors to Electricite de France Service National, Paris, France

Filed May 16, 1980, Ser. No. 150,367
Claims priority, application France, May 25, 1979, 79 13395
Int. Cl.³ G01K 1/08; H05B 7/18
U.S. Cl. 219—384 5 Claims

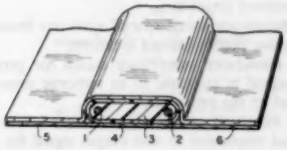


1. A process for locally demetallizing a metal coating on a strip of dielectric material, comprising the steps of moving said strip along a predetermined path while maintaining said coating in contact with a current return electrode held at a reference potential and while supporting the side of said strip opposite from said coating with a support means held at said reference potential, and applying, to discharge electrode means closely confronting said coating and having a high curvature portion of much greater curvature than that of the portion of said strip which confronts said coating, a DC electrical voltage adapted to maintain a Corona discharge between said discharge electrode means and said coating, whereby demetallization occurs along a predetermined defined zone of said strip as the latter is moved, without damaging said dielectric material.

4,425,497
PTC HEATER ASSEMBLY

David F. Leary, Woodside, and Alan Brigham, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 67,309, Aug. 17, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 216,952
Int. Cl.³ H05B 1/02
U.S. Cl. 219—544 7 Claims



1. A heater assembly which comprises

(a) a PTC heater which has a passive power rating of 70 to 200 watts/foot and which comprises

(i) an elongate strip of a conductive polymer PTC composition;

(ii) two elongate, parallel electrodes in physical and electrical contact with said strip; and

(iii) an electrically insulating jacket which surrounds said strip and said electrodes;

and

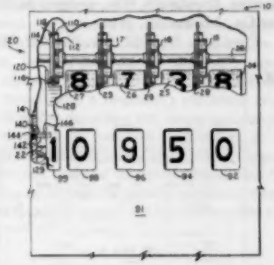
(b) an envelope which substantially surrounds and is in intimate thermal contact with said PTC heater, which is electrically insulated from said elongate strip and said electrodes by said insulating jacket, and which comprises a pair of elongate sheets which have said heater sandwiched between them and which contact each other on either side of the heater, said sheets being 2 to 50 mils thick and being composed of a material having a thermal conductivity of at least 0.3 Cal/cm. °C. sec.,

said heater assembly having an active power output at 50° F. which is at least 1.5 time the active power output at 50° F. of the PTC heater without the envelope.

4,425,498
METHOD AND SYSTEM FOR EXPANDING THE READOUT OF A FUEL PUMP REGISTER

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Aug. 30, 1982, Ser. No. 412,921
Int. Cl.³ B67D 5/22
U.S. Cl. 235—1 A 47 Claims



1. An expanded readout system for expanding the readout of resettable fuel pump register for registering the cost and volume of each fuel delivery, said register having upper and lower cost and volume counters of a type including a counter shaft, coaxial resettable counter wheels of ascending order mounted thereon, said counter wheels having outer rims bearing sequential indicia, engageable coaxial reset gears for resetting the counter wheels to a zero position, and engageable coaxial drive gears for conditioning the counter for counting, a transfer pinion shaft parallel to the counter shaft, and transfer pinions mounted on the pinion shaft for generating transfers from adjacent lower order to higher order counter wheels, said expanded readout system comprising:

(a) a shutter rotatably mounted on the counter shaft adjacent the reset gear of the highest order counter wheel and having an indicia surface and rotatable between two positions;

(b) a shutter pinion means mounted on the transfer pinion shaft and actuable by the highest order counter wheel; and

(c) a pawl means engageable with said shutter pinion means to rotate said shutter indicia surface from a first position to a second position and engageable with said adjacent reset gear to rotate said shutter indicia surface to said first position.

39. A method for expanding the readout of a resettable fuel pump register for registering the cost and volume of each fuel delivery, said register having upper and lower cost and volume counters and front and rear dial faces providing windows to read the cost and volume, said counters intermediate a pair of spaced side frames and of a type including a counter shaft, coaxial resettable counter wheels of ascending order mounted thereon, said counter wheels having outer rims bearing sequential indicia, engageable coaxial reset gears for resetting the counter wheels to a zero position, and engageable coaxial drive gears for conditioning the counter for counting, a transfer pinion shaft parallel to the counter shaft, and transfer pinions mounted on the pinion shaft for generating transfers from adjacent lower order to higher order counter wheels, said method comprising:

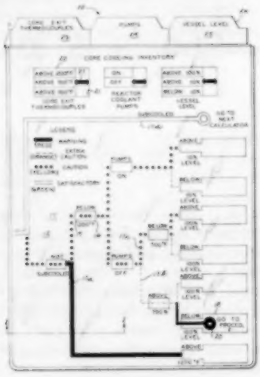
(a) providing a shutter pinion means;
(b) providing a shutter having an indicia rim, a slot, and a pawl means engageable with said shutter pinion means and with a reset gear;
(c) providing a stop means to disengage said pawl means from the reset gear;
(d) mounting the shutter pinion means on the transfer pinion shaft;
(e) mounting the shutter at the highest order end of the counter shaft adjacent the reset gear of the highest order counter wheel;
(f) mounting the stop means to the adjacent side frame;
(g) aligning the stop means with the slot; and
(h) aligning the shutter pinion with the pawl means.

4,425,499

DECISION TREE GRAPHICAL COMPUTER

Roger A. Newton, Brookfield, Wis., assignor to Wisconsin Electric Power Co., Milwaukee, Wis.

Filed Sep. 23, 1982, Ser. No. 421,783
Int. Cl.³ G06C *3/00*
U.S. Cl. 235—70 R **9 Claims**



1. A graphical logic computer for displaying conditions for parameters in an event network together with results determined by the logic formed in the structure of the computer members, the computer comprising:

front and back stationary members coupled together, the front stationary member having a plurality of parameter windows in one portion and having a set of event windows connected by graphic paths in another portion, the back stationary member having event indicator means aligned with the event windows, and the front and back stationary members also having means for displaying results at the ends of the graphic paths to relate events to results; and

at least two slidable members disposed in between the front and back stationary members, each slidable member having parameter indicator means for alignment within a respective parameter window and for movement between first and second positions in such window to select corresponding first and second conditions for its associated parameter, each slidable member also having logic windows for alignment with selected event windows in the front stationary member to permit observation of event indicator means for events which are connected in at least one graphic path to a displayed result, wherein each slidable member is adapted to be interposed between the event windows and the event indicator means for other events in a second graphic path to obscure visibility of the event indicator means leading to a different result,

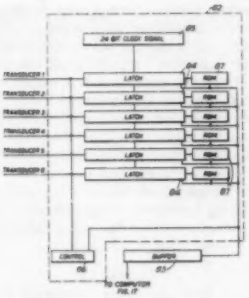
whereby the selected positions of the respective slidable members display the selected parameter conditions apart from the event network and the result.

4,425,500

FIRING RANGE

Lindsay C. Knight, Albury, Australia; David A. Cash, Surrey, England; Duncan Stewart, Buckinghamshire, England; Robert A. Cottis, Berkshire, England; William H. Bowyer, Surrey, England; Robert C. Newnham, Berkshire, England; Frederick J. Williams, Bedfordshire, England, and David W. Pardon, Hertfordshire, England, assignors to Australasian Training Aids (Pty.) Ltd., Albury, Australia

Continuation of Ser. No. 51,218, Jun. 22, 1979, Pat. No. 4,281,241, which is a continuation of Ser. No. 879,458, Feb. 21, 1978, abandoned. This application Jul. 23, 1981, Ser. No. 286,279
Claims priority, application United Kingdom, Feb. 21, 1977, 7253/77
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ F41J *5/12*; G06F *15/20*
U.S. Cl. 235—400 **25 Claims**



3. Apparatus for determining the location in a predetermined two-dimensional target area adjacent a target member through which the trajectory of a projectile passes, said projectile originating from a firing point and directed toward said target member, the apparatus comprising:

at least five transducers,

means for positioning said at least five transducers in a generally horizontal elongate array adjacent an edge of the predetermined target area,

said transducers positioned spaced apart one from the other at respective predetermined locations,

each said transducer comprising means for providing an output signal in response to an airborne pressure wave generated by the projectile,

individual threshold circuit means coupled to each transducer and responsive to said output signal for providing an indication signal when said output signal exceeds a predetermined threshold, the indication signal representing a time at which said airborne pressure wave generated by the projectile impinges on the transducer, and

processing means, provided with data representing the respective predetermined locations at which the transducers are positioned, and operative for

(1) determining time differences between the indication signal associated with one of said transducers relative to the indication signal associated with each of the remainder of the transducers,

(2) comparing the determined time differences with one another and selecting a number of said time differences which will produce at least three independent equations from which the location in said predetermined equations from which the location in said predetermined

target area through which said trajectory passes may be calculated,

(3) calculating, from said selected three time differences and from the data representing the respective predetermined transducer locations, the location in said predetermined target area through which said trajectory passes, and

(4) providing an indication of said calculated location.

25. A method for determining and remotely indicating the location of a source of energy in a defined area, comprising:

positioning at least three energy sensors in a generally horizontal elongate array adjacent an edge of said defined area;

sensing the arrival of airborne energy at said at least three energy sensors;

determining a first time difference between the sensing of said airborne energy at two of said sensors;

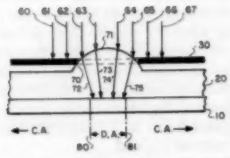
determining a second time difference between the sensing of said airborne energy at two of said sensors, at least one of which is other than either of the two sensors used to determine said first time difference;

remotely indicating the location of the energy source by indicator means activated according to said first and second time differences and which indicates the intersections of two families of hyperbolic curves, the foci of the first family of hyperbolic curves corresponding to the locations of the sensors which determined said first time difference, and the foci of the second family of hyperbolic curves corresponding to the locations of the sensors which determined said second time difference.

4,425,501
LIGHT APERTURE FOR A LENSLET-PHOTODETECTOR ARRAY

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 30, 1981, Ser. No. 249,032
Int. Cl.³ H01J 3/14, 40/14
U.S. Cl. 250—216 **4 Claims**



1. Apparatus for use with an auto focus camera including a circuit chip having a plurality of radiation responsive detector areas and a circuit area adjacent the detector areas which circuit area may produce error signals for the auto focus camera if exposed to light and including a transparent member having a plurality of lenslets formed therein and placed contiguous the chip so that each lenslet directs radiation from a remote source onto one of the detector areas, the improvement comprising:

an opaque member having a plurality of transparent portions therein placed contiguous the transparent member so as to permit radiation through the lenslets to reach the detector areas and to prevent radiation through the transparent member from reaching the circuit area.

4,425,502
PYROELECTRIC DETECTOR

Raymond F. Hall, Crawley, and Andrew A. Turnbull, Reigate, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

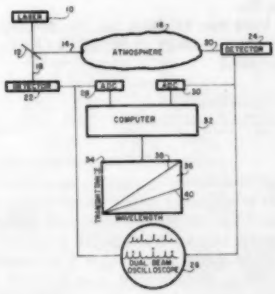
Filed Jun. 2, 1981, Ser. No. 269,307
Claims priority, application United Kingdom, Jun. 2, 1980, 8017945
Int. Cl.³ G01J 1/00
U.S. Cl. 250—338 **12 Claims**

1. A pyroelectric detector comprising an element of pyroelectric material for generating electrical charges at two opposed faces of the element when the temperature of the element changes, flexible film means resiliently supporting the element, the element being substantially less flexible than the flexible film means, and a respective electrical connection to each of said faces for detecting the electrical charges with the electrical connection to one face comprising an electrically conductive layer extending along and flexibly supported by the flexible film means, and the electrical connection to the other face comprising a further electrically conductive layer extending along and flexibly supported by the flexible film means.

4,425,503
METHOD FOR DETECTING THE PRESENCE OF A GAS IN AN ATMOSPHERE

Wendell R. Watkins, and Kenneth O. White, both of El Paso, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 175541, Aug. 5, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 393,223
Int. Cl.³ G01N 21/26
U.S. Cl. 250—345 **5 Claims**



1. A method of detecting the presence of a gas in an atmosphere comprising producing a beam of a long emission pulse of a laser having a wavelength range spanning an isolated absorption line of said gas, said wavelength range comprising a plurality of spectrally narrow emission spikes, splitting said beam into a reference beam and a transmitted beam, passing said transmitted through said atmosphere, detecting each of said reference beam and the transmitted beam after passing through said atmosphere and, for each emission spike, plotting the ratio of the amplitudes of the detected transmitted beam to the reference beam, against the wavelength of the spikes, whereby the formation of a wedge of data points having an upper slope and a lower slope indicates the presence of said gas in said atmosphere.

4,425,504
BOLOMETRIC DETECTOR

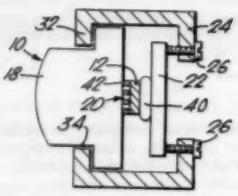
Andrew A. Turnbull, Reigate; Raymond F. Hall, Crawley, and Colin D. Overall, Reigate, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,271

Claims priority, application United Kingdom, Jul. 16, 1980, 8023310

Int. Cl.³ G01J *1/42*

U.S. Cl. 250—353 **4 Claims**



1. A bolometric detector for detecting radiation of a specified wavelength range comprising:

an optical immersion lens having a plane surface;

a substantially rigid substrate;

means for clamping the substrate to the lens;

a pyroelectric detector element, mounted on the substrate by way of a layer of resilient material disposed between the detector element and the substrate, said detector element being disposed between the plane surface of the lens and the substrate; and

foraminous spacing means disposed between the pyroelectric detector element and the plane surface of the lens.

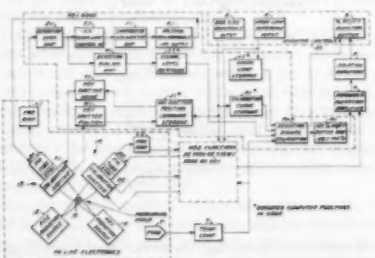
4,425,505
DUAL HEAD MEASURING TECHNIQUES FOR RADIATION GAGING OF REINFORCING BAR

Duane T. Jones, Coopersburg, and Nikolai Eberhardt, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 15, 1981, Ser. No. 254,556

Int. Cl.³ G01N *23/00*; G01B *11/04*

U.S. Cl. 250—359.1 **7 Claims**



1. A system for measuring weight per unit length of rod product which system converts radiation into a light source that varies as a function of a material property comprising

a first detection gage detecting radiation along an axis through the rod being measured,

a second detection gage detecting radiation along a second axis through the rod being measured, with said axes of said first and second detection gages substantially perpendicular to each other,

means to restrict the center axis of the rod product to within approximately 0.10 inch of the center of a radiation field produced by the first and second detection gages; and

means to sum and average the outputs of first and second detection gages.

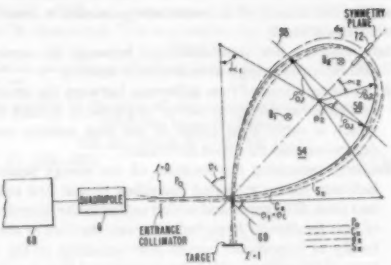
4,425,506
STEPPED GAP ACHROMATIC BENDING MAGNET

Karl L. Brown, Menlo Park; William G. Turnbull, Cupertino, and Phillip T. Jones, Los Altos, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 19, 1981, Ser. No. 323,010

Int. Cl.³ G21K *1/08*; H01J *3/32*

U.S. Cl. 250—396 ML **12 Claims**



1. A charged particle accelerator irradiation machine for irradiating an object comprising:

(a) charged particle accelerator means for accelerating a beam of charged particles along a given axis,

(b) a bending magnet system or bending said beam away from said axis through a deflection angle χ with respect to said given axis, said bending magnet system comprising,

(1) a first uniform magnetic field region and adjacent thereto, a second uniform magnetic field region, said magnetic fields of first and second region in the same direction, the magnetic field of said second region greater than the magnetic field in said first region, said first region comprising a first field boundary remote from said second region and said first and second regions comprising a second field boundary, said second field boundary forming a straight line,

(2) means for injecting said beam of charged particles into said first region through said first boundary at an angle β_i with respect to said first boundary in the plane of deflection whereby said beam is deflected through an angle with respect to said first boundary in the plane of deflection whereby said beam is deflected through an angle α_1 in the deflection plane into said second region and thence through said second boundary at an angle β_2 therewith and again deflected through an angle $2\ \alpha_2$ in said second region to again enter said first region whereby said beam is deflected through an additional angular interval α_1, and

(3) means for extracting said beam from said first region.

4,425,507
SPECIMEN CHAMBER OF ELECTRON PROBE INSTRUMENT

Anatoly F. Panov, ulitsa Sofii Kovalevskoi, 7, korpus 2, kv. 40; Vladimir I. Morozov, prospekt Stoikosti, 18, korpus 2, kv. 198; Kirill A. Makarov, ulitsa Sofii Kovalevskoi, 16, korpus 3, kv. 64, and Alexandr V. Rudnev, prospekt Nauki, 41, kv. 23, all of Leningrad, U.S.S.R.

PCT No. PCT/SU80/00103, § 371 Date Feb. 3, 1982, § 102(e) Date Feb. 3, 1982, PCT Pub. No. WO81/03580, PCT Pub. Date Dec. 10, 1981

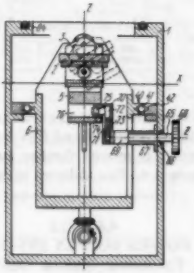
PCT Filed Jun. 9, 1980, Ser. No. 348,005

Int. Cl.³ H01J *37/20*

U.S. Cl. 250—442.1 **2 Claims**

1. A specimen chamber of an electron probe instrument,

comprising an airtight housing accommodating a movable object stage on which a specimen is placed, and drive mechanisms for moving the object stage along three mutually perpendicular coordinate axes, one of which is coincident with the electron-optical axis of the electron probe instrument, and for inclining the object stage in relation to said electron-optical axis, characterized in that the drive mechanism for moving the object stage (2) along the coordinate axis coincident with the electron-optical axis of the instrument comprises an eccentric pusher (69) having a shaft (65) with a hollow finger (70) se-



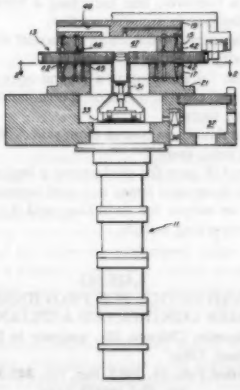
cured to said shaft (65) and accommodating a slide (72) loaded by a spring (73) at the end facing the shaft (65), while at the opposite end of said slide (72) there is rigidly secured an axle (75) on which there is mounted a rotatable roller (74) in permanent mechanical contact with the walls of a groove (76) provided in the base of a carriage (5) which is coupled to the stage (2), movable between two extreme points on guides (17, 54) and has means for being locked in its extreme positions on said guides (17, 54) which are parallel with said coordinate axis and are installed in a frame (6) arranged in the housing (1) and movable along another coordinate axis.

4,425,508

ELECTRON BEAM LITHOGRAPHIC APPARATUS

George C. Lewis, Jr., Sudbury, and Robert A. Vanslette, Medfield, both of Mass., assignors to GCA Corporation, Bedford, Mass.

Filed May 7, 1982, Ser. No. 375,867
Int. Cl.³ G21K *5/10*
U.S. Cl. 250—442.1 **7 Claims**



1. An electron beam lithographic system for the fabrication of devices having fine geometries, said system comprising:

means for forming an electron beam suitable for exposing a photolithographic resist and for scanning said beam over a limited region;

a movable plate-like puck including, on one side, means for holding a device to be exposed by said electron beam;

first puck locating means providing a first bearing surface for said puck including an annular pressurizable region for supporting said puck by gas pressure and, inwardly of said pressurizable region, evacuable region for scavenging gas escaping from between said puck and said first bearing surface, said means providing said first bearing surface including a central aperture through which said electron beam can expose a device carried by said puck;

second puck locating means providing a second bearing surface for the side of said puck opposite said first bearing surface, said second surface also including an annular pressurizable region for maintaining a separation between said second surface and said puck and, inwardly of said pressurizable region, an evacuable region;

frame means connecting said first and second puck locating means for holding the respective pressurizable and evacuable regions thereof in fixed alignment; and

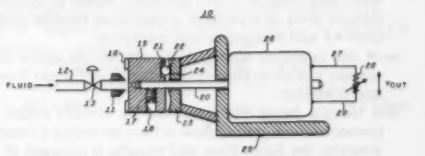
X-Y drive means for controllably positioning said puck with respect to said electron beam forming means thereby to permit selected portions of a device carried by said puck to be brought within the beam scanning region whereby said puck is precisely positioned between said surfaces without being subjected to distorting forces.

4,425,509

TURBOFLAPPER NOZZLE SYSTEMS

Joannes N. M. de Jong, Westford; Richard L. Earle, Mendon, and Anthony P. Nardi, Burlington, all of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,532
Int. Cl.³ G05D *16/20*; H02P *9/04*
U.S. Cl. 290—40 C **2 Claims**



1. A flapper nozzle system comprising:

a nozzle coupled to a supply of pressurized fluid;

rotatable flapper means having a plurality of blades responsive to fluid flow from said nozzle, said rotatable flapper means including a cylindrical member which is mounted for rotation in a support and which has a plurality of blades disposed on a front surface, a plurality of slots disposed on a rear surface, and a shaft coupled thereto;

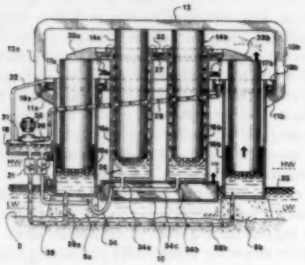
means for displacing said rotatable flapper means as a function of its angular velocity along its axis of rotation, said displacing means including a curved backplate coupled to said support, wherein said curved backplate retains a plurality of ball bearings disposed in the slots of said rotatable flapper means and permits the rotation and axial displacement of said shaft coupled to said rotatable flapper means; and

braking means for placing a variably adjusted load on said rotatable flapper means, said braking means including an electrical generator, coupled to said shaft of said rotatable flapper, and variable resistor coupled to the output leads of said electrical generator.

4,425,510
METHOD AND APPARATUS FOR TIDAL GENERATION OF POWER

Webster W. Jury, 221 Pines Lake Dr. E., Wayne, N.J. 07470

Filed Jun. 1, 1982, Ser. No. 383,496
Int. Cl.³ F03B 13/12
U.S. Cl. 290—42 7 Claims



1. A system for generating electric power in response to the rise and fall of tidal water which comprises in combination:

at least two containers, open at the top to the atmosphere, each closed at their lower ends, each of said containers enclosing a plunger in depending coaxial telescoping relation for vertical motion through an open upper end of said container wherein the inner wall of said container is spaced-apart from the outer wall of said plunger;

a float disposed to rise and fall with the tide;

one said container and the plunger in the other said container being in fixed position with reference to the rise and fall of said tide;

the other said container and the plunger in said one container being mechanically coupled to said float to move vertically with the rise and fall of said tide;

each of said containers being initially partially filled with sufficient liquid to overflow the top of said container when said plunger or said container moves in telescoping relation towards a position of maximum internal displacement by said plunger in said container;

each said container having fixed adjacent its upper end an annular trough to receive the overflow of liquid from the said container;

said troughs being interconnected by conduit means, and connected to a gravity flow system including a reservoir, whereby the liquid from said troughs is returned to each of said containers through said reservoir;

a turbine interposed into said gravity flow system and operative to generate power in response to the flow of liquid through said gravity flow system.

4,425,511
PLANAR COIL APPARATUS EMPLOYING A STATIONARY AND A MOVABLE BOARD

Amnon Brosh, 16 Sunnyside Dr., Montvale, N.J. 07645

Filed Feb. 9, 1981, Ser. No. 232,654
Int. Cl.³ H03K 3/00
U.S. Cl. 307—106 10 Claims

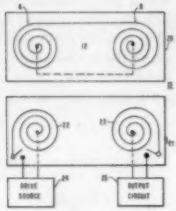
1. Apparatus for providing an output signal indicative of a movement between at least a first and a second position comprising:

(a) a first stationary planar member having disposed on a surface thereof a first flat serpentine coil structure, and at least a second flat serpentine coil structure adjacent thereto; with said coils positioned side by side;

(b) means for applying a drive signal to said first coil;

(c) a second movable planar member having disposed on a surface thereof a closed loop coil structure;

(d) means for moving said second planar member in a direction transverse to said first member and overlying the same and in close proximity thereto to allow flux induced in said first coil to couple to said second coil, whereby as

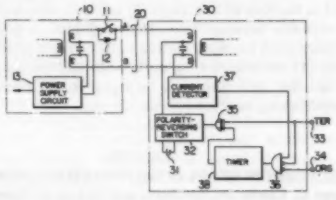


said second member is moved closer to said first member, the magnitude of said induced flux increases, and as said second member is moved further away from said first member, there is no flux induced in said second coil.

4,425,512
POWER SUPPLY SYSTEM

Keiji Tomooka, Yokohama; Makoto Ogawa, Chigasaki, and Hideo Ishiguro, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 367,078
Claims priority, application Japan, Apr. 10, 1981, 56-53034
Int. Cl.³ H01H 1/60
U.S. Cl. 307—138 9 Claims



1. A power supply apparatus comprising:

a power supply circuit of a terminal device;

a polarity-reversing switch for a d.c. power source of a center equipment, connected to said terminal device through a two-wire line including a hook switch and a terminating power supply rectifier;

a current detector for detecting a current supplied through said polarity-reversing switch;

an AND gate for performing a logical operation on an output from said current detector, a terminating signal and an originating signal;

a timer for delaying an output from said AND gate a predetermined time; and

an exclusive OR gate for performing a logical operation on an output from said timer and said terminating signal to generate an output for switching said d.c. power source polarity-reversing switch.

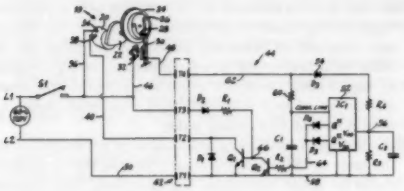
4,425,513
METHOD AND DEVICE FOR PROVIDING DWELL IN TIMER CONTROLLED APPLIANCES

Thomas F. Gleason, Chicago, Ill., assignor to Eation Corporation, Cleveland, Ohio

Filed Feb. 16, 1982, Ser. No. 349,111
Int. Cl.³ H01H 3/34
U.S. Cl. 307—141.4 6 Claims

3. A method of controlling the operational cycle timing of an appliance operating from a source of alternating current or pulsed direct current power comprising the steps of:

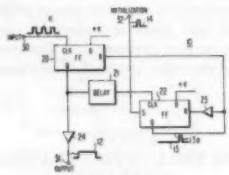
(a) providing a timer motor and at least one appliance cycle function switch operated by said timer;
(b) counting an accumulated number of cycles of said power source and generating a first signal when said count reaches a number representing a desired lapsed time interval and generating a second signal upon occurrence of a predetermined multiple of said number; and,
(c) switching off said timer motor in response to either of said first or second signals for providing a dwell in said cycle timing.

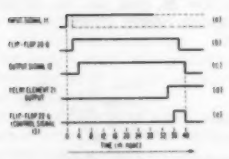


4,425,514
FIXED PULSE WIDTH, FAST RECOVERY ONE-SHOT PULSE GENERATOR

John R. Orr, Pennsauken, and Jacob H. Hoover, Jr., Medford, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 10, 1981, Ser. No. 320,017
Int. Cl.³ H03K *3/033, 3/86*
U.S. Cl. 307—265 9 Claims





1. An apparatus responsive to an input signal for generating a signal pulse of a predetermined width regardless of subsequent occurrences of said input signal during said signal pulse, said apparatus comprising:

pulse generating means responsive to said input signal at one input thereof for initiating said signal pulse at an output thereof and a control signal at a second terminal thereof for terminating said signal pulse, said signal pulse being initiated substantially coinstantaneously with said input signal;

said pulse generating means including means having a short duration time constant so that said apparatus may be responsive to a subsequent occurrence of said input signal immediately upon the termination of said signal pulse for generating a subsequent signal pulse of said predetermined width;

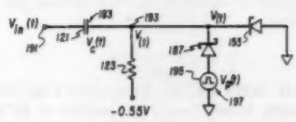
means coupled to the output of said pulse generating means for delaying said signal pulse, said delay time being in fixed relation to said predetermined width of said signal pulse; and

means for generating said control signal in response to said delayed signal pulse, said control signal being a pulse of short duration equal to said short duration time constant, said control signal being coupled to said second terminal of said pulse generating means for terminating said signal pulse.

4,425,515
METHOD AND MEANS TO MINIMIZE RISETIME OF A MICROWAVE PULSE MODULATED SIGNAL FROM A FREQUENCY MULTIPLIER CIRCUIT

Ronald K. Larson, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 16, 1981, Ser. No. 321,503
Int. Cl.³ H03K *3/33, 5/12*
U.S. Cl. 307—268 9 Claims



1. A method of minimizing the risetime of a pulse modulated microwave output signal from a frequency multiplier circuit having a capacitance, wherein the risetime is degraded by a delay associated with charging the capacitance to a steady state voltage, comprising the steps of:

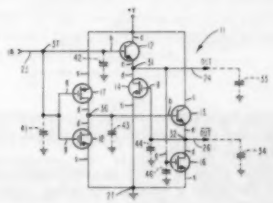
injecting a select pulse into the frequency multiplier circuit; and

precharging the capacitance to the steady state voltage with the injected select pulse.

4,425,516
BUFFER CIRCUIT AND INTEGRATED SEMICONDUCTOR CIRCUIT STRUCTURE FORMED OF BIPOLAR AND CMOS TRANSISTOR ELEMENTS

Frank M. Wanlass, Cupertino, Calif., assignor to ZYTREX Corporation, Sunnyvale, Calif.

Filed May 1, 1981, Ser. No. 259,651
Int. Cl.³ H03K *17/04, 17/62, 17/693, 19/092*
U.S. Cl. 307—446 14 Claims



1. A buffer circuit comprising at least one pair of bipolar transistors, each of said pair of bipolar transistors having emitter, collector and base regions in an emitter follower circuit configuration;

at least one pair of FET transistors for each pair of bipolar transistors and each having source, drain, and gate regions defining a conducting channel between its source and drain, one of said pair of FET transistors connected with its conducting channel in series with the emitter region of one of said pair of bipolar transistors and the other of said pair of FET transistors connected with its conducting channel in series with the emitter of the other of said pair

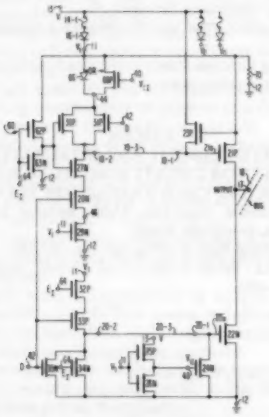
of bipolar transistors, each FET of said pair of FET transistors respectively connected in circuit with the emitter region of the bipolar transistor so that said FET transistor is in a conduction state opposite said bipolar transistor to which it is connected upon the application of a bias voltage to the transistors and of input signals to the bases of the bipolar transistors, the gate region of each FET of said pair of FET transistors connected to the emitter region of the bipolar transistor connected in series with the conducting channel of the other FET of said pair of FET transistors; and a pair of complementary FET transistors being connectable to said bias voltage, each having source, drain, and gate regions defining a conducting channel between its source and drain, the conducting channels of said pair of complementary FET transistors serially connected so that each defines a current path extending to a common junction, said common junction connected to said base region of one transistor of said pair of bipolar transistors, the gate regions of said pair of complementary FET transistors connected together and to the base region of the other transistor of said pair of bipolar transistors.

4,425,517

FAIL SOFT TRI-STATE LOGIC CIRCUIT

Allan M. Smith, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,608
Int. Cl.³ H03K *19/007, 19/003, 19/092, 19/094*
U.S. Cl. 307—473 **6 Claims**



2. A tri-state logic device comprising in combination:

first and second circuit points across which a first operating potential may be applied;

a third circuit point to which in combination with said second circuit point a second operating potential may be applied;

a control terminal for receiving a binary valued signal;

a data terminal for receiving a binary valued signal;

a circuit output terminal;

first and second transistors of complementary conductivity types each having a conduction path and a control electrode, the conduction paths being connected in series between said first and second circuit points, the electrical midpoint of the series conduction path being connected to said circuit output terminal;

means coupling said data terminal and said control terminal to said second transistor control electrode;

a third transistor of the same conductivity type as said first transistor having its control terminal connected to said first circuit point and having its conduction path extending between said third circuit point and first transistor control elecgtrode;

a fourth transistor of the same conductivity type as said second transistor, having a control electrode, and having its conduction path connected between said second circuit point and said control electrode of said second transistor;

fifth and sixth transistors of complementary conductivity types having conduction paths series connected between said third circuit point and second circuit point, the electrical midpoint of the series connection being connected to said fourth transistor control electrode, the control electrodes of said fifth and sixth transistors being connected to said first circuit point;

seventh, eighth, and ninth transistors of conductivity type the same as said second transistor having their conductive paths in series connected between said first transistor control electrode and said second circuit point, the control electrodes of said eighth and ninth transistors being connected to said data terminal and said first circuit point, respectively, said control electrode of said seventh transistor being coupled to receive a signal which is a function of the signal applied to said control terminal;

tenth and eleventh transistors of the same conductivity type as said first transistor, the control electrode of said eleventh transistor being connected to said data terminal, said control electrode of said tenth transistor being coupled to receive a signal which is a function of the signal applied to said control terminal; and

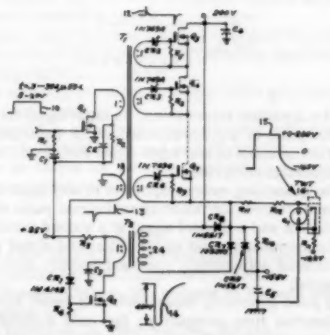
means for passing current to the conduction path of said tenth and eleventh transistors only when said first operating potential is present between said first and second circuit points, said means having two terminals, one of which is connected to said first circuit point, the conduction paths of said tenth and eleventh transistors being connected in parallel between said first transistor control electrode and the other terminal of said means for passing current.

4,425,518

HIGH VOLTAGE FIELD EFFECT TRANSISTOR PULSE APPARATUS

Walter E. Milberger, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 25, 1981, Ser. No. 247,495
Int. Cl.³ H03K *17/687, 3/45*
U.S. Cl. 307—571 **6 Claims**



1. A high voltage field effect transistor pulse apparatus comprising in combination

a pulse forming means to receive an input pulse signal, said pulse forming means providing a trigger pulse in response to said input trigger signal,

a first coupling means connected to said pulse forming means to receive said trigger pulse,

a first gating means connected to said first coupling means to receive said trigger pulse, said first gating means being operatively connected to a high voltage, said first gating means being responsive to said trigger pulse to provide a high voltage output pulse with a rise time of less than 25 nanoseconds, said first gating means comprising a plurality of field effect transistors in series, and,

a pull down means that is inversely coupled to said first coupling means to receive a control pulse therefrom, said pull down means comprising:

a second gating means to receive said control pulse, said second gating means being responsive to said control pulse and providing an off trigger signal,

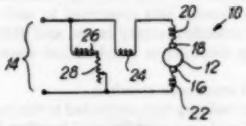
a second coupling means to receive said off trigger signal, said second coupling means having a predetermined coupling ratio, said second coupling means stepping up said off trigger signal to a higher value, said second coupling means including limiting means to limit said off trigger signal to a predetermined voltage, said off trigger signal being applied to said first gating means to terminate said high voltage output pulse.

4,425,519

CRACK RESISTANT ARMOR TERMINATION FOR POLE FACE WINDING BARS

Roy L. Balke, and Martin A. Zgraggen, both of Erie, Pa., assignors to General Electric Company, Research Triangle Park, N.C.

Filed Apr. 19, 1983, Ser. No. 486,502
Int. Cl.³ H02K *15/12*
U.S. Cl. 310—45 **5 Claims**



1. A pole face winding bar comprising:

a metallic conductor;

an insulating layer covering a central portion of said metallic conductor;

a slot armor covering said second ends of said insulating layer onto said metallic conductor;

said slot armor being a resin-impregnated woven glass fiber tape wherein said resin is cure to provide a protective coating for said insulating layer;

at least a first strip of glass cloth tape wound for in excess of one full turn about an interface between a first end of said slot armor and said metallic conductor;

said first strip of glass colth tape overlying a substantial portion about a full perimeter of said slot armor;

said first strip of glass cloth tape extending beyond said first end and overlying a substantial portion about a full perimeter of said metallic conductor;

said first strip of glass cloth tape overlapping itself in a portion of winding exceeding one full turn;

said first strip of glass cloth including an adhesive on a first surface and a bare glass fiber fabric on a second surface thereof, said adhesive including means compatible for forming a tenacious bond with said slot armor, said metallic conductor and said second surface;

said adhesive and said strip of glass cloth tape being effective to prevent entry of contaminants between said armor slot and said metallic conductor; and

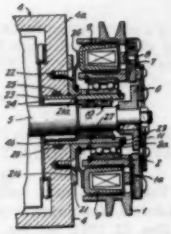
said bare glass fiber fabric being effective to provide a surface which is favorable for retaining a layer of an insulating paint thereon which is continuous from said slot armor to said metallic conductor and effective to resist cracking of said layer at interfaces thereof.

4,425,520

REDUCED DIAMETER DEVICES WITH AN ELECTROMAGNETIC CLUTCH

Masaharu Hiraga, Isesaki, Japan, assignor to Sankyo Electric Company Limited, Gunma, Japan

Continuation of Ser. No. 107,436, Dec. 26, 1979, abandoned. This application Mar. 17, 1982, Ser. No. 358,926
Claims priority, application Japan, Dec. 25, 1978, 53-162320; Jan. 12, 1979, 54-2732
Int. Cl.³ F16D *13/62*
U.S. Cl. 310—92 **8 Claims**



1. In a device having a housing, a drive shaft extending out of, and rotatably mounted on, the housing, a cantilever bearing support attached to said housing, an electromagnetic clutch including a pulley member rotatably supported on said bearing support by first bearing means, an electromagnet fixedly supported on said bearing support and disposed within an annular cavity of said pulley member, an electromagnetic armature plate elastically connected to said drive shaft, and axial stopper means secured to said bearing support for preventing said bearing means from axial movement, the improvement which comprises said housing being made of aluminum alloy, said bearing support including a tubular member of steel coaxial with said drive shaft and a separate flange member having a flange portion secured to the front surface of said housing and a cylindrical portion whose inner surface is affixed to an outer surface of said tubular member, said bearing means disposed between an end surface of said cylindrical portion and said axial stopper means, and an end surface of said cylindrical portion opposed to said flange portion and an end surface of an inner ring of said bearing means being provided with interlocking means to prevent rotation of said inner ring of said bearing means relative to said bearing support.

4,425,521

MAGNETIC SLOT WEDGE WITH LOW AVERAGE PERMEABILITY AND HIGH MECHANICAL STRENGTH

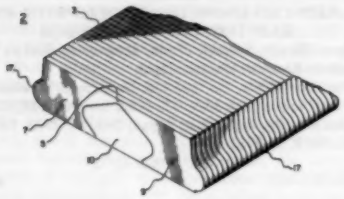
George M. Rosenberry, Jr., Hendersonville, Tenn.; John A. Mallick, Delanson, and Elke Richter, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1982, Ser. No. 384,700
Int. Cl.³ H02K *3/48*
U.S. Cl. 310—214 **4 Claims**

1. A magnetic wedge for closing the stator slots of a toothed stator core of an AC machine, said magnetic wedge comprising:

a nonmagnetic and nonconductive support rod; and a stack of laminations of magnetic material, each lamination having two regions of magnetic material joined by a bridge portion narrow in the radial direction which saturates during machine operation, said bridge portion being narrowed in the radial direction at its center portion and becoming wider as distance from the first and second region decreases, the two regions and said bridge defining

an opening which aligns with the opening in each other lamination in said stack of laminations so as to define a



channel having a narrowed entrance, said rod being positioned in said channel with each lamination having a clamp fit about said rod.

4,425,522

ROTATIONAL SPEED INDICATION SIGNAL GENERATOR HAVING A PLURALITY OF GENERATING COILS

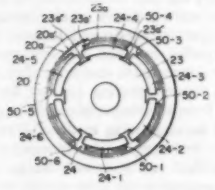
Takao Miyasaka, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 22, 1981, Ser. No. 333,271

Claims priority, application Japan, Dec. 22, 1980, 55-184457[U]

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—268 **11 Claims**



1. A rotational speed indication signal generator, comprising:

(a) a base plate;

(b) a rotary shaft mounted rotatably with respect to said base plate, said rotary shaft being arranged to be driven by an external rotational force applied thereto;

(c) an outer disk made of a magnetic material and coaxially arranged with respect to said rotary shaft, said outer disk having gear teeth along its inner periphery;

(d) an inner disk made of a magnetic material, said inner disk having gear teeth at its outer periphery so that said gear teeth of said outer disk surround and face said gear teeth of said inner disk with an annular gap between said outer and inner disks, said inner disk having a plurality of slots radially extending for defining a plurality of equiangularly spaced apart integral radial projections, angles between successive projections being less than 180°, one of said outer and inner disks being stationary with respect to said base plate, the other of said outer and inner disks being stationary with respect to said rotary shaft;

(e) a permanent magnet attached to said outer or inner disk for constituting a magnetic circuit together with said outer and inner disks; and

(f) a plurality of generating coils wound respectively around said radial projections in such a manner that the axis of each of said generating coils is normal to said rotary shaft so that said generating coils are radially arranged and lie along axes in a common plane angles between successive axes being less than 180° said generating coils being electrically connected in series so that resultant sum voltage caused from a component of ambient magnetic flux at any angle parallel to the plane of said inner disk equals zero.

4,425,523

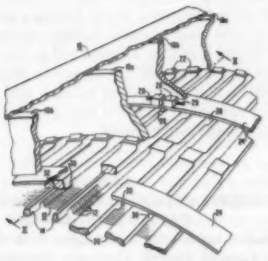
CORE SPRING SUPPORT SYSTEM FOR A DYNAMOELECTRIC MACHINE

Felix M. Detinko, Pittsburgh; Nicholas S. Kosanovich, Forest Hills, and John A. Levino, Sewickley Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1982, Ser. No. 385,164

Int. Cl.³ H02K *1//12*

U.S. Cl. 310—258 **10 Claims**



7. A stator structure for an electric generator, comprising:

a cylindrical shell member;

a plurality of annular frame rings connected to and extending radially inward from said shell member;

a plurality of spring bars connected to said annular frame rings and extending axially inside, said plurality of spring bars being disposed in a cylindrical association of said shell;

a cylindrical inner core member;

a plurality of building bars connected to the outer cylindrical surface of said core member, said building bars extending axially and protruding radially outward from said core member, said building bars being arranged in a cylindrical association;

said cylindrical association of building bars describing an outside diameter smaller than the inside diameter described by said cylindrical association of spring bars;

means for deforming preselected portions of said spring bars radially inward against said building bars; and

said cylindrical association of spring bars being shaped to receive said cylindrical association of building bars in a slidable, coaxial association.

4,425,524

PIEZOELECTRIC SWITCH USING PIEZOCERAMIC BENDING ELEMENTS, AND IN PARTICULAR A RELAY UTILIZING SUCH ELEMENTS

Garth D. Hillman, Nashville, Tenn., assignor to Northern Telecom Inc., Nashville, Tenn.

Continuation of Ser. No. 167,002, Jul. 9, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,229

Int. Cl.³ H01H *57/00*

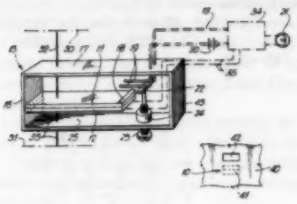
U.S. Cl. 310—332 **4 Claims**

1. A piezoelectric operated indicator device for use in telephone status line indicators, said device comprising:

a piezoelectric device having two piezoelectric elements bonded together, said elements being oppositely polarized and being connected as a single member which is cantilever mounted at one end and has an opposite free end;

means for applying an electrical voltage across said two elements, said two elements being in electrical series whereby said piezoelectric device bends from an unbent

position in a first or a second direction when a voltage of a first or a second polarity, respectively, is applied; and means responsive to the bending of said piezoelectric device for producing a visual indication of said bending whereby said visual indication producing means provides an indication of a voltage of a predetermined polarity being applied across said series connected elements, said visual indication producing means comprising a wall having an opening formed therein, said opening being positioned such that a portion of said piezoelectric device is visible in said opening when said piezoelectric device is in one of the bent and unbent positions, and said portion of said piezoelectric device is not visible in said opening when said piezoelectric device is in another of said bent or unbent positions.

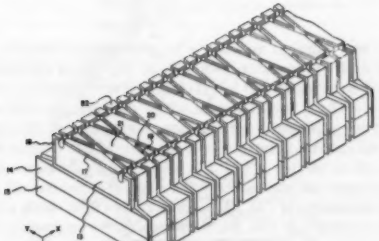


4,425,525

ULTRASONIC TRANSDUCER ARRAY SHADING

Lowell S. Smith, Schenectady, N.Y.; Axel F. Brisken, Shingle Springs, and Michael S. Horner, Davis, both of Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,146
Int. Cl.³ H01L *41/22*
U.S. Cl. 310—336 **6 Claims**



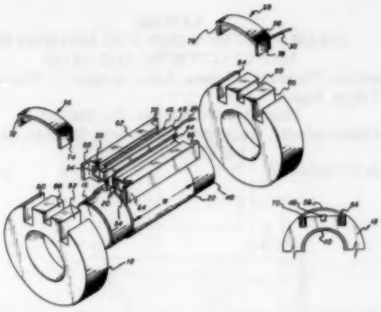
1. A shaded linear ultrasonic transducer array comprising a plurality of elongated transducer elements which have electrodes on opposite surfaces and are all wider at the center and narrower at either end such that in the Y-axis direction parallel to the element length the intensity of emitted ultrasound is greater at the center than at the ends of the array and the radiation pattern has reduced side lobe levels.

4,425,526

METHOD OF MAKING ELECTRICAL CONNECTIONS TO THIN FILM COATINGS AND THE ELECTRICAL CONNECTOR FORMED THEREBY

Bruce E. Mount, Diamond Bar, Calif., assignor to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Oct. 29, 1981, Ser. No. 316,176
Int. Cl.³ H01L *41/18*
U.S. Cl. 310—800 **6 Claims**



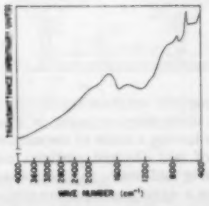
1. An electrical connector for thin film comprising,
means defining a relatively thin strip of film material coated on both sides with a conductive material,
support means,
said film being adhered to the outside surface of said support means and arranged so that a pair of parallel end areas of the strip of film material face one another along an outer wall of the support means,
a conductive bar located between said end areas,
a pair of resilient conductive pads positioned against the film material on the side of the film opposite from said conductive bar to provide a large area contact to both end areas of the film,
said pads and said conductive bar being spaced from said support means,
means pressing said pads into engagement with said film at a controlled preselected pressure, and
means for connecting said conductive bar and said pads to an electrical source.

4,425,527

OPTICAL FILTERS COMPRISING PYROLYZED POLYIMIDE FILMS AND LAMP

Enid K. Sichel, Lincoln, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 22, 1981, Ser. No. 276,449
Int. Cl.³ H01J *61/40*
U.S. Cl. 313—112 **8 Claims**



6. In a lamp comprising an incandescent filament, a selective optical absorption filter in back of and in reflecting relationship to said filament to reflect visible light directly through the

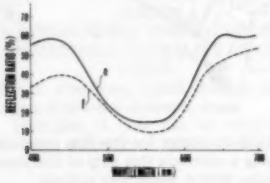
forward portion of the lamp and transmit infrared radiation, an enclosing light-transmitting envelope around said filament and said filter, the improvement wherein said selective optical absorption filter comprises a film of the thermal decomposition product formed by heating a polymeric pyromellitimide at a temperature of about 600° C. to about 700° C. for a period of about 2 to 6 hours in an inert gas atmosphere said film of thermal decomposition product characterized by maximum light transmittance above about 2 μm wavelength.

4,425,528

COLOR PICTURE TUBES AND METHOD OF MANUFACTURING THE SAME

Naomitsu Watanabe, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,497
Claims priority, application Japan, May 16, 1980, 55-64126
Int. Cl.³ H01J *29/10*
U.S. Cl. 313—466 **3 Claims**



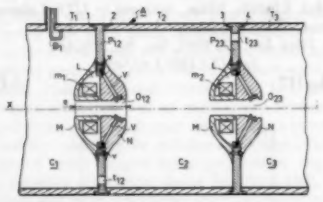
1. A color picture tube provided with a three color fluorescent screen comprising phosphors applied to predeteremined portions of an inner surface of a panel of said tube for emitting red, green and blue color lights, and a filter substance selectively located to be operative with each one of said red and blue phosphors and coated on the inner surface of said panel, said filter substance having a color different from colors of lights emitted by said red or blue phosphors.

4,425,529

CHARGED-PARTICLE ACCELERATING DEVICE FOR METRIC WAVE OPERATION

Hubert Leboutet, St. Cloud, France, assignor to C.G.R. MeV, Buc, France

Filed Mar. 3, 1981, Ser. No. 240,236
Claims priority, application France, Mar. 4, 1980, 80 04835
Int. Cl.³ H01J *25/10*
U.S. Cl. 315—5.41 **9 Claims**



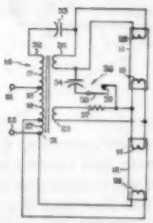
1. A charged-particle accelerating device for metric wavelength operation comprising a source of charged particles, a linear accelerator having a series of resonant cavities for accelerating a beam of said charged particles and means in said cavities for focusing said beam, an electromagnetic wave generator for emitting a signal and injecting said signal into a least one of said resonant cavities, means for applying a pulsed high voltage to the particle source to produce said particles, and means for scanning a target with the beam of accelerated particles, wherein the electromagnetic wave generator comprises a thermionic tube provided with a cathode, an anode and at least one grid, at least one of the resonant cavities of the accelerating structure being electromagnetically coupled to the grid-anode space of the tube.

4,425,530

TIME DELAY LAMP BALLAST CIRCUIT

Edward E. Hammer, Mayfield Village, and Eugene Lemmers, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,878
Int. Cl.³ H05B *39/04, 41/36*
U.S. Cl. 315—104 **5 Claims**



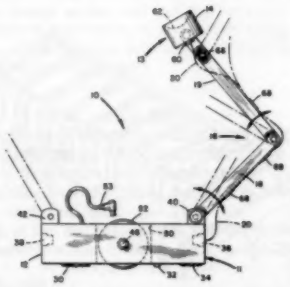
1. A rapid start fluorescent lamp circuit having two or more fluorescent lamps connected in electrical series across a source of operating voltage, means to supply heating current to the lamp cathodes, and a starting capacitor and a time delay switch connected in series across one or more of said lamps, said time delay switch being adapted to close after the cathodes of said lamps have heated to a desired temperature to apply substantially all of the operating voltage across a first one of said lamps to start said first one of said lamps and after starting of said first one of said lamps to allow the application of substantially all of the operating voltage across another of said lamps to start said another of said lamps.

4,425,531

ELECTRONIC FLASH UNIT ASSEMBLY

Ralph Holmes, 216 Diana Dr., Burley, Id. 83318

Filed Sep. 1, 1981, Ser. No. 298,368
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—241 P **6 Claims**



1. An electronic flash unit assembly connectable to and triggerable by a camera comprising:

(a) a triggerable power and control module connectable to a camera and having:

(1) a housing containing a power source with a controllable variable power output,

(2) means for connecting the power source to a camera so that operation of the camera triggers the power source,

(3) power cord receptacles connected to said power

source provided in right side and left side surfaces of said housing,

(4) a first bracket protruding forwardly from a right front surface of the housing,

(5) a second bracket protruding forwardly from a left front surface of the housing, and

(6) a shaft received in said housing and having a threaded end portion protruding above a top surface of the housing for connecting the housing to the camera;

(b) a flash module containing an electronic flash tube,

(c) an assembly of articulated flash arms for supporting said flash module spaced from said power and control module, said assembly having one end articulated to said flash module and one end articulated to one of said first and said second brackets; and

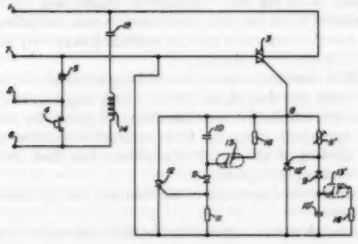
(d) power cord means carried by said assembly for furnishing power to the electronic flash tube when the power source is triggered and having one end connected to said flash module and one end connected to one of said power cord receptacles.

4,425,532

CIRCUIT ARRANGEMENT OF A STAIRCASE LIGHTING TIME SWITCH

Silvano Sinkauz, Ruze Petrovic 19, 52000 Pula, Yugoslavia

Filed Feb. 16, 1982, Ser. No. 348,714
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—360 **3 Claims**



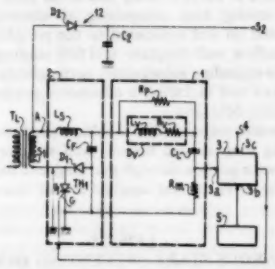
1. Circuit arrangement of a staircase lighting time switch comprising a triac (3), the first main terminal of which is connected to one power terminal (1) and the second main terminal of which is connected to the lamp terminal (7) to which the lamps (5) are connected, and that for controlling the trigger gate current of the triac (3) two triggering circuits are used, each consisting of a thyristor (12, 12') in parallel to the anode and the cathode of which a serial connection of a capacitor (10, 10'), a diode (9, 9') and a resistor (11, 11') is connected so that one connection of the capacitor (10, 10') is connected to the anode of the thyristor (12, 12') and the other connection of the resistor (11, 11') to the cathode of the thyristor (12, 12'), whereat in parallel to the capacitor (10, 10') for discharging it a series connection of a reed relay (13, 13') and a resistor (16, 16') is connected, and that for securing the trigger gate current for the triac (3) for both half-waves the thyristors (12, 12') are connected between the second main terminal (7) of the triac (3) and its gate (8) in such a manner that to this gate (8) the anode of the thyristor (12) and the cathode of the thyristor (12') are connected.

4,425,533

GENERATOR FOR PRODUCING A D.C. SUPPLY VOLTAGE IN A TELEVISION RECEIVER COMPRISING A VERTICAL SCANNING CIRCUIT

Joseph Colineau, and Gerard Rilly, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Nov. 28, 1980, Ser. No. 211,206
Claims priority, application France, Dec. 4, 1979, 79 29765
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 **5 Claims**



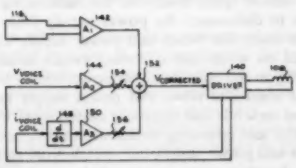
1. A generator for supplying a d.c. voltage, especially to the amplifiers of the video stage in a television receiver, comprising a vertical scanning circuit in which the power for producing the current which passes through the vertical deflector is drawn solely from a cicuit supplied by means of line retrace pulses delivered by the secondary winding of a transformer, a capacitor in series with the vertical deflector being such that the voltage at the terminals of the assembly comprising said deflector and said capacitor has a constant sign which is independent of the direction of the current flowing through said deflector, the circuit being provided with an active switch which comprises a diode mounted in parallel, but in the opposite direction, with respect to a thristor or a transistor, said active switch being controlled and modulated at the line frequency, and wherein a rectifier circuit comprising a diode in the same direction as the diode of the active switch is connected to and is powered by said secondary winding of said vertical scanning circuit in order to deliver said d.c. supply voltage.

4,425,534

LINEAR MOTOR VELOCITY SENSOR

Avraham Perahia, San Jose, Calif., assignor to Pertec Computer Corporation, Los Angeles, Calif.

Continuation of Ser. No. 13,480, Feb. 21, 1979, Pat. No. 4,291,593. This application Nov. 27, 1981, Ser. No. 325,107
Int. Cl.³ H02K *33/12, 41/02*
U.S. Cl. 318—135 **4 Claims**



1. A linear motor comprising:

a permanent magnet core including an annular outer member and an elongated central member respectively defining spaced first and second pole faces, said core producing a substantially uniform magnetic field across an air gap defined between said spaced pole faces;

a voice coil comprising a multiple turn electrical conductor physically configured as a cylindrical hollow wall structure, said structure supported around said core central member, at least partially within said air gap, for movement along a linear path coincident with the axis of said coil and the elongated direction of said central member and substantially perpendicular to said magnetic field;

drive means electrically connected to said voice coil for supplying a drive current thereto to interact with said magnetic field for developing a force on said hollow wall structure to move it along said linear path

a first sensing loop comprising an electrical conductor mounted on and contoured to the peripheral surface of said hollow wall structure, said first sending loop defining an axis extending substantially perpendicular to said voice coil axis and including a conductor portion within said magnetic field; and

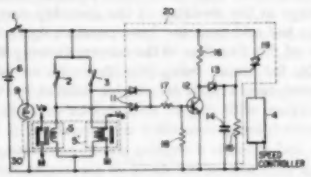
circuit means responsive to a voltage produced by said first sensing loop as said hollow wall structure carries said conductor portion through said magnetic field for controlling the drive current supplied to said voice coil.

4,425,535

ERRONEOUS START PREVENTING DEVICE FOR BATTERY-POWERED VEHICLE

Shohei Kamimoto, Musashimurayama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jan. 27, 1981, Ser. No. 228,923
Claims priority, application Japan, Jan. 30, 1980, 55-9599
Int. Cl.³ H02P *1/00*
U.S. Cl. 318—139 **7 Claims**



1. A solid-state device for preventing erroneous starts in a battery-powered vehicle, which comprises:

(a) a power supply key switch having on and off states and connected to a power supply having a negative pole and a positive pole;

(b) an operating switch means having on and off states for operatively directing the battery-powered vehicle to move in a desired direction;

(c) a solid-state first switching circuit means having on and off states, said solid-state first switching circuit means being located between said power supply key switch and a vehicle speed controller and operatively connected to said vehicle speed controller for maintaining an off state so as to disconnect the power supply from the vehicle speed controller when said power supply key switch is turned on while said operating switch means is on, for turning on and connecting the power supply to the vehicle speed controller when said power supply key switch is turned on while said operating switch is off, for remaining on after said operating switch means is turned on and off while said power supply key switch is on, and for turning off only when said power supply key switch is turned off; and

(d) a second switching circuit means connected to said operating switch means and turned on when said operating switch means is turned on for connecting the power supply to a reversible motor,

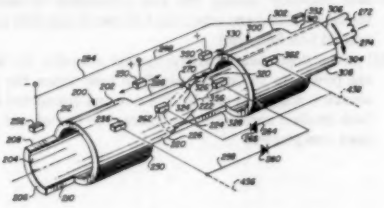
whereby the battery-powered vehicle starts with the reversible motor and vehicle speed controller operated when first said power supply key switch is turned on and thereafter said operating switch means is turned off.

4,425,536

POSITIVE CONTACTS COMMUTATOR APPARATUS

Dwayne E. Larsen, 2103 E. Des Moine, Mesa, Ariz. 85203

Continuation-in-part of Ser. No. 95,500, Nov. 19, 1979, abandoned. This application Jan. 7, 1982, Ser. No. 337,690
Int. Cl.³ H02K *13/00*
U.S. Cl. 318—439 **14 Claims**



1. Commutator and brush apparatus for an electric motor having a rotating shaft, comprising in combination:

first conductive means secured for rotation on the motor shaft, including

a first conductive portion extending arcuately for three hundred sixty degrees,

a second conductive portion extending arcuately for substantially less than three hundred sixty degrees, and

a third conductive portion disposed generally arcuately opposite from the second conductive portion and extending arcuately for substantially less than three hundred sixty degrees;

second conductive means secured for rotation on the motor shaft with the first conductive means and electrically isolated from the first conductive means, including

a fourth conductive portion extending arcuately for three hundred sixty degrees,

a fifth conductive portion extending arcuately for substantially less than three hundred sixty degrees, and

a sixth conductive portion disposed generally arcuately oppositely from the fifth conductive portion and extending arcuately for substantially less than three hundred sixty degrees;

output means connected to the first and second conductive means;

input brush means disposed on the first conductive means for providing a current for the output means during a first portion of each three hundred sixty degree rotation of the shaft, and disposed on the second conductive means for providing a current for the output means during a second portion of each three hundred sixty degree rotation of the shaft;

return brush means disposed on the second conductive means for providing a return path for the electrical current from the output means and from the input brush means during the first portion of each three hundred sixty degree rotation of the shaft, and disposed on the first conductive means for providing a return path during the second portion of each three hundred sixty degree rotation of the shaft;

first diode brush means connected to the first and second conductive means for providing a current return path from the second conductive means to the first conductive means during a third portion of each three hundred sixty degree rotation of the shaft; and

second diode brush means connected to the first and second conductive means for providing a current return path from the first conductive means to the second conductive

means during a fourth portion of each three hundred sixty degree rotation of the shaft.

4,425,537

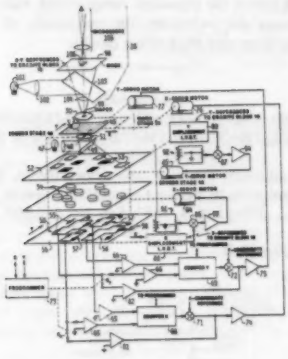
X-Y ADDRESSABLE WORKPIECE POSITIONER AND MASK ALIGNER USING SAME

Edward H. Phillips, Mountain View, and Karl-Heinz Johannsmeier, Los Altos, both of Calif., assignors to Optimetrix Corporation, Mountain View, Calif.

Continuation of Ser. No. 918,713, Jun. 26, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,364

Int. Cl.³ G05B 1/06

U.S. Cl. 318—640 12 Claims



1. A servo control system comprising:

stage means movable along orthogonal axes for positioning a workpiece relative to a work apparatus;

first and second drive means respectively responsive to first and second drive signals and operative to drive said stage means along said axes;

position detector means for monitoring the position of said stage means relative to the work apparatus and including a reference substrate carried by said stage means and having orthogonal dimension position related indicia disposed thereupon, and

means for sensing said indicia and developing first and second actual position signals corresponding to the positioning of said substrate along said axes;

input means for generating first and second desired position signals corresponding to positions along said axes to which said stage means is to be driven; and

first and second position control means for respectively comparing said first and second desired position signals to said first and second actual position signals and for developing said first and second drive signals for application to said first and second drive means respectively to cause said workpiece to be driven to a desired position.

4,425,538

TIMEPIECE WITH A DEVICE FOR THE CONTROL OF A STEPPING MOTOR

Jean-Claude Berney, Epalinges, Switzerland, assignor to Jean-Claude Berney SA, Epalinges, Switzerland

Filed Feb. 10, 1981, Ser. No. 233,087

Claims priority, application Switzerland, Feb. 19, 1980, 1320/80

Int. Cl.³ G04F 5/00

U.S. Cl. 318—696 13 Claims

1. A timepiece comprising:

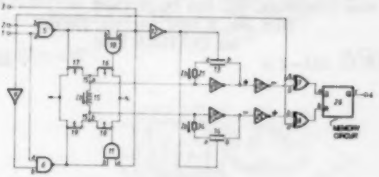
a stepping motor including a coil and a rotor;

an oscillator for providing a standard frequency signal;

a frequency divider connected to said oscillator for dividing down said standard frequency signal and delivering a plurality of periodic signals of different frequencies;

a motor control device connected to said frequency divider and comprising a driver circuit for applying current driving pulses to said coil; and

detecting means for delivering a signal when a particular point in the characteristic of the current in said coil appears, the time of the appearance of said particular point being variable as a function of the load of the motor;



said motor control device further including control means receiving the signal delivered by said detecting means and acting on said driver circuit to vary the energy supplied to said motor by said driving pulses in proportion to the variations of the time of the appearance of said particular point in the characteristic of the current in the coil with respect to the driving pulse, this change in the energy being effected in a single step at least when the variation of the time of the appearance of said particular point with respect to the driving pulse corresponds to an increase in the load of the motor.

4,425,539

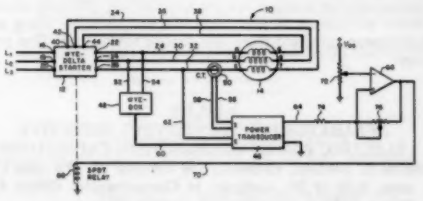
CONTROL SYSTEM FOR AC INDUCTION MOTOR

Frank E. Wills, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 129,958, Mar. 13, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,554

Int. Cl.³ H02P 1/32, 5/28

U.S. Cl. 318—771 2 Claims



1. A control system for coupling the primary windings of an AC induction motor to a source of three-phase electric power, comprising;

a wye-delta starter for coupling the primary windings to the power source in order to apply power to the induction motor and which, in response to starting, connects the primary windings into a wye-connection to limit the in-rush current normally occurring at start-up;

power sensing means for generating a control signal which is directly proportional to the power applied to the induction motor;

and differential comparator means responsive to said control signal and to an adjustable reference signal, representing a preselected power input level, for generating an actuating signal for switching the wye-delta starter between a first condition, wherein the primary windings are connected in a wye-connection, and a second condition wherein the primary windings are connected in a delta-connection,

the first condition being established, to effect energy savings,

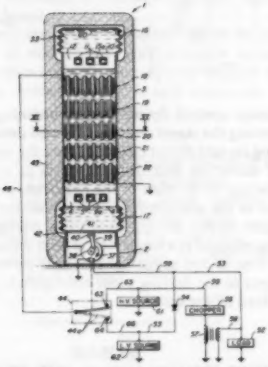
during light loads when the power applied to the induction motor is below the preselected power input level, whereas the second condition is established during heavier loads when the power applied to the motor is above the preselected power input level.

4,425,540

APPARATUS AND METHOD FOR PYROELECTRIC POWER CONVERSION

Randall B. Olsen, Olivenhain, Calif., assignor to Power Conversion Technology, Inc., San Diego, Calif.

Filed Jun. 3, 1981, Ser. No. 270,105
Int. Cl.³ H02N *1/00*
U.S. Cl. 322—2 A **44 Claims**



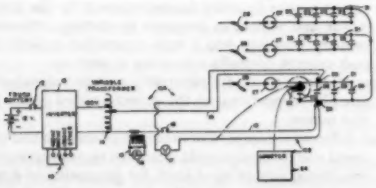
1. A pyroelectric power converter comprising a capacitor formed of dielectric material having temperature dependent capacitance, a regenerative heat transfer medium which exhibits a temperature gradient therealong and with which the capacitor is in continuous heat transfer relation, and actuating means for effecting relative movement of said capacitor and medium along said temperature gradient from a first toward a second relative position, and for alternatively effecting relative return movement of said capacitor and medium along said temperature gradient from said second toward said first position.

4,425,541

APPARATUS FOR IDENTIFYING DEFECTIVE ELECTRIC POWER DISTRIBUTION CAPACITORS

Merlin E. Burkum, Elmhurst, and Timothy M. O'Regan, Chicago, both of Ill., assignors to Commonwealth Edison Co., Chicago, Ill.

Filed Sep. 14, 1981, Ser. No. 301,949
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **5 Claims**



1. An apparatus for detecting incipient faults in a power capacitor having:

an alternating current power source including a storage battery having an output of between 12 and 24 volts and an inverter having an input of between 12 and 24 volts D.C. and an output of 120 volts at a frequency of 400 hertz;

a variable transformer for varying the output voltage of the said power source;

connecting means for supplying alternating output voltage of said variable transformer to the power capacitor to be tested;

a voltmeter for measuring magnitude of output voltage of said variable transformer at the capacitor to be tested;

an open and closed type, split magnetic core probe utilizing the Hall-effect for sensing and amplifying the charging current from the output of said variable transformer which enters the capacitor being tested; and

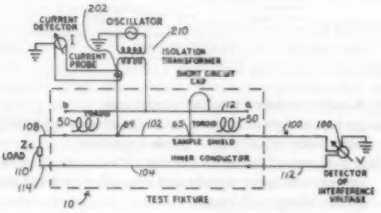
an ammeter for indicating the magnitude of the current output from said Hall-effect device.

4,425,542

METHOD AND APPARATUS FOR MEASURING THE SURFACE TRANSFER IMPEDANCE OF A PIECE OF SHIELDED CABLE

Anatoly Tsaliovich, Wheaton, and John Kincaid, Batavia, both of Ill., assignors to Belden Corporation, Geneva, Ill.

Filed Sep. 1, 1982, Ser. No. 413,603
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58 R **15 Claims**



7. A test fixture for measuring the surface transfer impedance of a sample of a shielded cable over a wide frequency range above and below about 10 MHz, the cable having an outer shield and an inner conductor, the test fixture comprising:

enclosure means for defining a cylindrical region having a conducting boundary and substantially coaxially containing and defining a length of the shielded cable sample;

excitation means for exciting a substantially determined alternating current limited to said defined length on the outside of said shielded cable sample, said current having a return path in said conducting boundary, and said current being variable in frequency below about 1 GHz;

measurement means responsive to said current and to a voltage between said inner conductor and said outer shield for determining the surface transfer impedance of said sample.

4,425,543

HIGH STABILITY BUFFERED PHASE COMPARATOR

William A. Adams, College Park, and Victor S. Reinhardt, Gaithersburg, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 17, 1981, Ser. No. 284,314
Int. Cl.³ G01R *25/00*
U.S. Cl. 324—83 R **19 Claims**

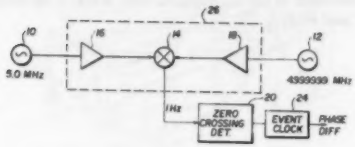
1. A low noise RF signal phase comparator for signals of substantially the same frequency and providing a high degree

of RF isolation and relatively high phase stability for changes in ambient temperature, comprising:

first and second buffer amplifier means (**16, 18**) adapted to be coupled to respective input signals of substantially the same frequency;

signal mixer means (**14**) coupled to said first and second means (**16, 18**) and being operable to heterodyne said input signals to provide a difference signal output;

said first and second amplifier means and said mixer means each including both active and passive circuit elements;



common heat sink means (**28**) in thermal contact with said active circuit elements (**62, 68, 70** and **82, 88 90** and **110**) of said first and second amplifier means (**16, 18**) and said mixer means (**14**) for providing a common temperature reference for said active circuit elements; and

detector means (**20**) coupled to said mixer means including a signal level crossover detector (**122, 132**) for providing an output signal of varying amplitude exhibiting relatively abrupt leading and trailing edges at crossings of a predetermined signal level whereby crossings of said predetermined signal level provide an indication of the phase difference between said input signals.

4,425,544

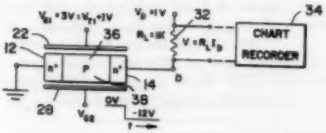
DUAL-GATE DEEP-DEPLETION TECHNIQUE FOR CARRIER-GENERATION-LIFETIME MEASUREMENT

Phillip W. Barth, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1981, Ser. No. 241,307

Int. Cl.³ G01R *31/26*

U.S. Cl. 324—158 D **5 Claims**



1. A method for measuring the carrier generation lifetime in an inversion mode MOS device of the type having a dielectrically isolated thin film semiconductor and having a capability of dual gate control, which comprises the steps of:

(a) establishing a first equilibrium state of said device by:

(1) applying a voltage to a first gate control which is greater than the equilibrium threshold voltage of the channel associated with said first gate control;

(2) applying a voltage to the second gate control which is less than the threshold voltage of the channel associated with said second gate control; and

(3) applying a voltage to the drain of said device so that said device is in the saturation region of operation during said first equilibrium state; and

(4) coupling the source of said device to circuit ground;

(b) applying a step voltage to the second gate control which is large enough to turn off the channel associated with the first gate control; and

(c) measuring the drain current during steps (a) and (b), said step of applying a step voltage producing a characteristic transient effect in said drain current, the recovery time constant of said transient effect being related to the carrier generation lifetime in said device according to the relationship $\tau_R = \tau_G \times 2N_A/n_i$ where τ_R is the recovery time constant, τ_G is the carrier generation lifetime, N_A is the acceptor concentration, and n_i is the intrinsic carrier concentration.

4,425,545

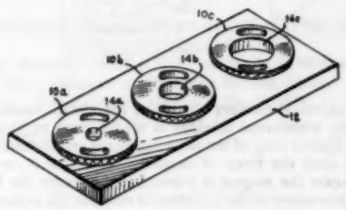
EDDY CURRENT PROBE CALIBRATION STANDARD

Joseph J. Scalese, 5531 Laird Rd., Loomis, Calif. 95650

Filed Jul. 27, 1981, Ser. No. 286,816

Int. Cl.³ G01R *35/00*

U.S. Cl. 324—202 **8 Claims**



1. An eddy current probe calibration standard for the calibration of an eddy current probe comprising in combination:

a holding block fixture to provide a plurality of seating means,

a plurality of calibration discs seated respectively in said plurality of seating means in said holding block fixture, said plurality of calibration discs comprising a suitable material to conduct eddy currents, each of said plurality of calibration discs having a central hole therein to accept an eddy current probe for calibration thereof, each of said holes being of different diameters, each of said holes containing a slot disposed in the wall of the hole, said slot having a longitudinal axis, said longitudinal axis of said slot being parallel to the central axis of said hole, said slot having predetermined dimensions, said slot providing a known defect to said eddy current probe for the adjustment thereof, and

means for holding said calibration discs in said holding block fixture.

4,425,546

COATING THICKNESS GAUGE

James C. Taylor, Ravenhurst, Sycamore Ave., Heywood, England

Filed Mar. 5, 1981, Ser. No. 240,614

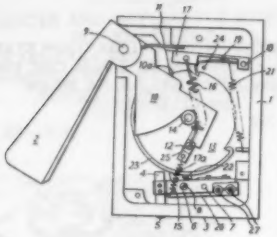
Claims priority, application United Kingdom, Mar. 5, 1980, 8007500

Int. Cl.³ G01B *7/06*

U.S. Cl. 324—230 **7 Claims**

1. A coating thickness gauge for measuring the thickness of a coating on a substrate of magnetic material, the gauge comprising a housing having a base which can be positioned on the coating; a magnet movably mounted in the housing and situated so as to be magnetically held on the coating by attraction by the substrate when the base is in position on the coating; a withdrawal member movably mounted in the housing; damping means mounted in said housing and engaging said withdrawal member for damping the movement of the withdrawal member; a first spring coupling the withdrawal member to the magnet; a brake mounted in said housing and engageable with the withdrawal member and actuated by release of the magnet; an indicator coupled to said withdrawal member to indicate the position of the withdrawal member with respect to said

housing; a second spring in the housing and coupled to the withdrawal member and stronger than said first spring and urging said withdrawal member away from said magnet for increasing the force exerted by said first spring on said magnet; a handle movably mounted with respect to the housing, and a release mechanism coupled to the withdrawal member, the arrangement being such that actuation of the handle releases



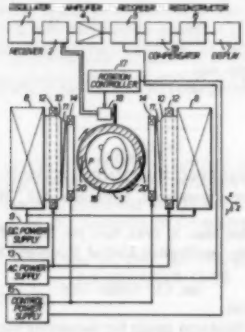
the withdrawal member by way of the release mechanism so that the withdrawal member is drawn back by the second spring against drag of the damping means and stresses the first spring until the force of magnetic attraction is overcome, whereupon the magnet is released and actuates the brake to arrest movement of the withdrawal member, the indicator thus giving an indication in accordance with the thickness of the coating.

4,425,547

NUCLEAR MAGNETIC RESONANCE APPARATUS HAVING MEANS FOR COMPENSATING A PROJECTING SIGNAL

Hiroshi Sugimoto, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 9, 1981, Ser. No. 272,071
Claims priority, application Japan, Jun. 13, 1980, 55-79789
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—318 **3 Claims**



1. In nuclear magnetic resonance apparatus of the type in which information as to the nuclear magnetic resonance concentration distribution of a specified atomic nucleus in multiple directions in a specified plane of a body to be examined is obtained by means for producing a homogeneous static magnetic field overlapping a gradient magnetic field, means for electrically rotating the isomagnetic field surface of said gradient magnetic field with respect to said body, and coil means including a coil wound around the body, for impressing electromagnetic waves upon the body and for detecting nuclear resonance signals in response to the impressed fields and electromagnetic waves, the improvement comprising:

a coil holder made of a material containing none of said specified atomic nucleus both for holding said coil in a predetermined shape and for suitably spacing said coil from said body when positioned in the coil;

a pair of standard signal sources made of a material containing said specified atomic nucleus and disposed in said coil holder for facing each other through a body positioned in the coil for compensating a projection signal; and

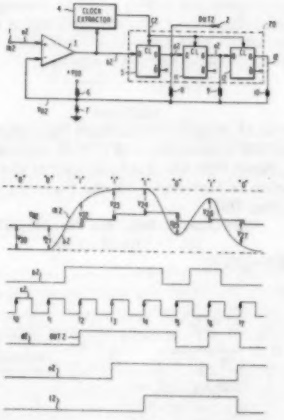
a drive device for rotating said coil holder with its signal sources and said coil as a unit in synchronism and cooperation with the electric rotations of said gradient magnetic field, said paired standard signal sources always being positioned in the isomagnetic field surfaces on both sides of said body.

4,425,548

DIGITAL SIGNAL PROCESSING CIRCUIT

Kouzou Kage, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,346
Claims priority, application Japan, Sep. 9, 1980, 55-123990
Int. Cl.³ H03K *13/32*
U.S. Cl. 328—162 **10 Claims**



1. A digital signal processing circuit comprising:

reference voltage generator means for generating a reference voltage;

comparator means having a first input for receiving said reference voltage and a second input for receiving a digital signal which is distorted in a known manner;

shift register means connected to an output of the comparator means;

clock pulse extractor means for extracting clock pulses from said digital signal and applying the clock pulses to the shift register means; and

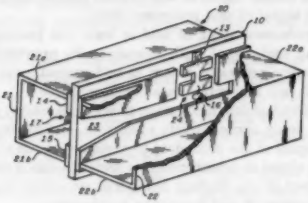
weighing circuit means connected between the shift register means and a predetermined one of the first and second inputs of said comparator means, said weighting circuit means having an operating characteristic determined in accordance with an output of said shift register means which in turn operates as a function of said digital signal, whereby reference voltage changes are made at said comparator input to offset any adverse effect of said known digital input signal distortion.

4,425,549

FIN LINE CIRCUIT FOR DETECTING R.F. WAVE SIGNALS

Paul M. Schwartz, Belleair Beach, and James C. Chu, Tampa, both of Fla., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 286,813
Int. Cl.³ H01P 3/12; H03D 1/10
U.S. Cl. 329—161 8 Claims



1. A fin line apparatus within a waveguide having substantially parallel top and bottom walls, and two substantially parallel sidewalls substantially perpendicular to said top and bottom walls, for supporting propagation therein of electromagnetic waves having a predetermined wavelength and for providing signals responsive to said electromagnetic waves, comprising:

a dielectric material, disposed in a plane between and substantially parallel to said two sidewalls of said waveguide;

a first metallic film conductor having a thickness that is a fraction of said wavelength, disposed substantially parallel to said sidewalls on a first planar surface of said dielectric material so that the area of said first planar surface not covered by said first metallic film conductor comprises a first region having a longitudinal axis substantially parallel to a longitudinal axis of said waveguide, said first region having a first end, and a second end having a flare, said area further comprising a second region having a first end opening into said first region between said flare and said first end of said first region, and having a second end disposed proximate the plane in which said top wall of said waveguide is disposed;

a second metallic film conductor, disposed substantially parallel to said sidewalls on a second planar surface of said dielectric material opposite said first metallic film conductor, in substantial alignment with said first metallic film conductor and said second region; and

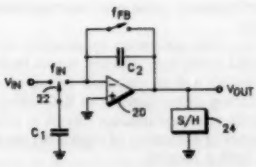
means, disposed substantially in said second region, for receiving electromagnetic waves from said first region and for providing output signals therefrom.

4,425,550

CHARGE PUMP AMPLIFIER

Michael D. Smith, and James A. Miller, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1981, Ser. No. 334,280
Int. Cl.³ H03F 1/34
U.S. Cl. 330—107 5 Claims



1. A charge pump amplifier comprising:

an operational amplifier having an input and an output;

feedback means connected between the input and the output of the operational amplifier and comprising a storage means;

means selectively coupled to the input of the operational amplifier and to a voltage source, for storing a charge from the voltage source, and for transferring the stored charge to the input of the operational amplifier;

means for selectively discharging the storage means at a rate different than the rate at which the stored charges are applied to input of the operational amplifier;

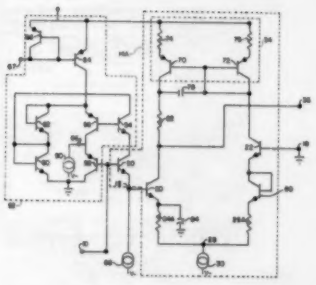
whereby a plurality of charges from the means for storing a charge are transferred to the storage means, and the plurality of the charges are accumulated by the storage means prior to the discharge thereof.

4,425,551

DIFFERENTIAL AMPLIFIER STAGE HAVING BIAS COMPENSATING MEANS

David E. Blackmer, Wilton, N.H., and David R. Welland, Boston, Mass., assignors to DBX, Inc., Newton, Mass.

Filed Mar. 26, 1981, Ser. No. 247,649
Int. Cl.³ H03F 3/45
U.S. Cl. 330—261 11 Claims



1. In an amplifier of the type comprising at least two input terminals and a differential pair of transistors, at least one input terminal being adapted to receive an input signal and said differential pair of transistors including first and second bipolar transistors, said first transistor being coupled to system ground, wherein the improvement comprises:

bipolar transistor means comprising a third bipolar transistor having a base, emitter and collector, said base of said third transistor being coupled to said one input terminal and said emitter of said third transistor being coupled to said second transistor so as to buffer said one input terminal from said differential pair; and

compensation means for generating a compensating current to said bipolar transistor means, said collector of said third bipolar transistor being coupled to said compensation means so as to operate as an emitter follower, said compensation means comprising fourth, fifth and sixth bipolar transistors, each of said fourth, fifth and sixth transistors having a base, collector and emitter, said base of said fourth transistor being coupled to the base of said third transistor, said collector of said fourth transistor being coupled to system ground and said emitter of said fourth transistor being coupled to the collector of said sixth bipolar transistor, said emitter of said fifth transistor being coupled to the collector of said third bipolar transistor and said collector of said fifth transistor being coupled to a predetermined voltage source; and said emitter of said sixth bipolar transistor is adapted to be coupled to a preselected voltage source; and

means for reducing DC voltage offset between the bases of said differential pair, said means for reducing said voltage

offset comprising diode means coupled to the emitter of said first transistor, a first resistance means coupling said diode means to a junction point, and a second resistance means coupling the emitter of said second transistor to said junction point, wherein the values of said first and second resistors are set to reduce the noise through said differential pair;

wherein said bipolar transistor means and said compensation means are adapted to reduce the amount of bias signal drawn from said input signal by said differential pair than would be otherwise drawn by said differential pair if said one input terminal were directly connected to said differential pair.

4,425,552

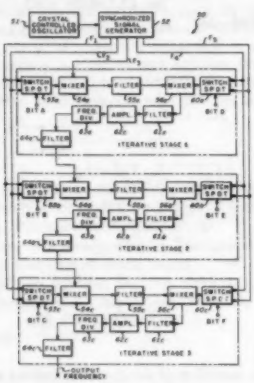
DIRECT-TYPE BINARY FREQUENCY SYNTHESIZER

Ronald C. Stirling, Clearwater, Fla., assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 88,973, Oct. 29, 1979. This application Aug. 17, 1981, Ser. No. 291,204

Int. Cl.³ H03B *21/02*

U.S. Cl. 331—39 **2 Claims**



1. A direct-type binary frequency synthesizer, providing an output signal, comprising:

frequency generator means for providing at least five output signals having, respectively, predetermined frequencies F_1, F_2, F_3, F_4, and F_5 such that $F_1-F_3=F_4-4F_3$, and $F_5-F_4=2F_1-2F_2$;

binary bit command signal means for providing binary bit command signals;

at least one processor stage, a processor stage providing an output signal, and having:

first switch means, coupled to said frequency generator means and said binary bit command signal means, for receiving said binary bit command signals and said signals having frequencies F_1 and F_2, and for selectively providing, in response to said binary bit command signals, an output signal of either said signal having frequency F_1 or said signal having frequency F_2;

first mixer means, responsive to said output signal of said first switch means, and a second input signal, for providing an output signal having a frequency which is the frequency difference between said output signal of said first switch means and said second input signal;

second switch means, coupled to said frequency generator means and said binary bit command signal means, for receiving said binary bit command signals and said signals having frequencies F_4 and F_5, and for selectively providing, in response to said binary bit command signals, an output signal of either said signal having frequency F_4 or said signal having frequency F_5;

second mixer means, responsive to said output signal of said second switch means and said output signal of said first mixer means, for providing an output signal having a frequency which is the frequency difference between said output signal of said first mixer means and said output signal of said second switch means; and

divider means, responsive to said output signal of said second mixer means, for providing an output signal having a frequency which is one-quarter of the frequency of said output signal of said second mixer means, said output signal of said divider means being said output signal of said processor stage,

a first processor stage of said at least one processor stage having said signal with frequency F_3 provided by said frequency generator means as said second input signal to which said first mixer means is responsive,

each additional processor stage of said at least one processor stage being consecutively numbered, and having the output signal of the preceding processor stage as said second input signal to which said first mixer means is responsive,

the output of the highest numbered processor stage being said output of said frequency synthesizer,

whereby the frequency of said output signal of said frequency synthesizer is $F_3+(D/4^N)\ F_S$, where F_S is $(F_5-F_4)/2$, N is the number of processor stages, and D is the base 10 number which is equivalent to the base 2 number which results from forming, for each processor stage, an ordered pair whose right entry is the frequency of the output signal of said first switch means, and whose left entry is the frequency of the output signal of said second switch means; and, from concatenating from right to left the ordered pairs of consecutively, increasingly numbered processor stages; and, from replacing, within the sequence so formed, F_1 by 0, F_2 by 1, F_4 by 0, and F_5 by 1.

4,425,553

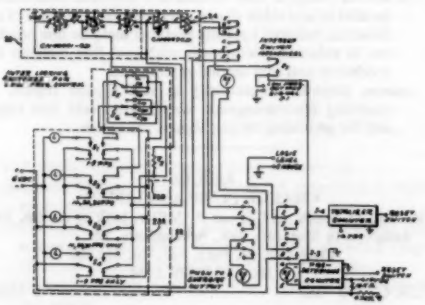
LOW FREQUENCY PULSE GENERATOR APPARATUS

Donald C. LaPierre, West Acton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,557

Int. Cl.³ H03K *3/03*

U.S. Cl. 331—74 **1 Claim**



1. A low frequency pulse generator apparatus comprising in combination:

a pulse rate selector means to generate timing control signals, said pulse rate selector means including a variable pulse timing unit to vary said timing control signals, said pulse timing unit comprises an R-C timing network which is a series resistor-capacitor circuit in which one or more capacitors of a plurality of capacitors may be connected in series with a resistor,

a pulse generator means to generate a low frequency pulse signal, said pulse generator means receiving said timing control signals, said timing control signals controlling the

frequency of said pulse signal, said pulse rate selector means comprises:

a pulse rate range selector means to provide a plurality of pulse rate ranges, said pulse rate range selector means providing a predetermined range of pulse rates, said pulse rate ranges being individually selectable, and a pulse frequency timing means to provide a variable pulse frequency timing signal, said variable pulse frequency timing signal controlling the frequency of said pulse signal from said pulse generator means,

an amplifying means receiving and amplifying said pulse signal,

a counter means connected to said amplifying means to receive said pulse signal, said counter means including a selective counting means for counting a predetermined number of pulses, said selective counting means providing a count complete signal when said predetermined number of pulses has been counted,

a switching means to connect said pulse signal from said amplifying means to an output terminal, said switching means comprises a first, second and third switching means wherein said pulse signal is connected first through said first switching means to and through said third switching means to and through said first switching means to said counter means, said second switching means being energized by said counter means to enable said first and third switching means, said third switching means including means to manually energize said third switching means, and,

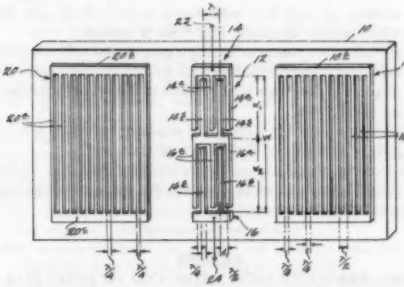
an interrupt means connected between said amplifier means and said counter means, said interrupt means providing manual control over the application of said pulse signal to said counter means.

4,425,554

SURFACE ACOUSTIC WAVE RESONATOR DEVICE

Shigefumi Morishita, and Yasuo Ebata, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 6, 1981, Ser. No. 318,855
Claims priority, application Japan, Jan. 19, 1981, 56-5166
Int. Cl.³ H03H 9/25, 9/64
U.S. Cl. 333—195 **20 Claims**



1. A surface acoustic wave resonator device comprising:

a substrate having at least a layer of piezoelectric material;

at least one transducer means disposed on the surface of said piezoelectric layer for converting an input electrical signal to surface acoustic waves propagating on said piezoelectric surface of the substrate, said transducer comprising a plurality of interdigital transducers electrically connected to each other in series between terminals to which the input electrical signal is applied and aligned to form surface acoustic wave propagation paths parallel to each other, and said interdigital transducers each having first and second electrodes with finger electrodes arranged in an interdigitated relationship; and

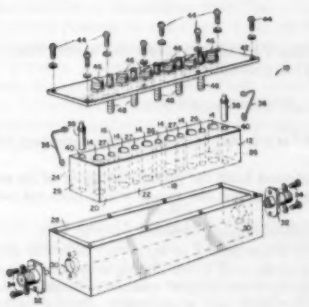
grating reflector means having an aperture length and disposed on said piezoelectric surface for reflecting the surface acoustic waves, said reflector means including a plurality of parallel spaced reflecting elements arranged in parallel to said finger electrodes of said interdigital transducers and a spacing between adjacent reflecting elements is equal to a spacing between adjacent finger electrodes of said interdigital transducers, and said aperture length of said grating reflector means extending at least the width of said surface acoustic wave propagation paths.

4,425,555

DIELECTRIC FILTER MODULE

Takeshi Meguro, and Yukio Ito, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 23, 1981, Ser. No. 314,428
Claims priority, application Japan, Oct. 30, 1980, 55-154103[U]
Int. Cl.³ H01P 1/208, 7/04
U.S. Cl. 333—202 **10 Claims**



1. A dielectric filter module, comprising:

an elongated dielectric filter, which includes an elongated dielectric block having a plurality of elongated and substantially parallel cavities opening onto the surface thereof, a conductive film which coats at least part of the exterior surface of the block and at least part of the interior surface of at least one of the cavities, input/output means for introducing radio frequency energy into the block and for withdrawing radio frequency energy from the block, and a plurality of screws each movable along the axis of a corresponding cavity to adjust the filter characteristics; and

an open housing within which the dielectric filter is mounted, the open housing comprising a first elongated plate, a second elongated plate spaced apart from the first elongated plate and substantially parallel thereto, and a third elongated plate connecting the first and second elongated plates, the dielectric filter being mounted between the first and second plates with the axes of the cavities therein passing through at least one of the three plates, said at least one of the three plates through which the axes of the cavities pass having a plurality of holes therein through which the adjustment screws movably extend.

4,425,556
CERAMIC COLD CONDUCTOR AND METHOD OF PRODUCING THE SAME

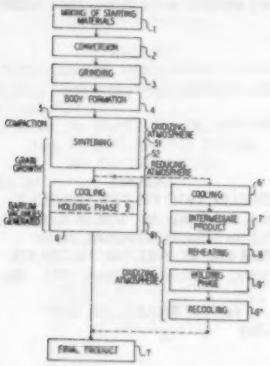
Leopold Hanke, Beyharting, and Helmut Schmelz, Prien, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1981, Ser. No. 259,908

Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019098

Int. Cl.³ H01C *7/02*

U.S. Cl. 338—25 **4 Claims**



1. A ceramic PTC resistor based on a barium titanate crystallite having the general formula:

$$(Ba_{1-x}M^{II})O.z(Ti_{1-y}M^{IV})O_2$$

wherein M^{II} is selected from the group consisting of Ca, Mg, Sr and Pb;

M^{IV} is selected from the group consisting of Sn and Zr;

x and y are numerals, the sum of which does not exceed one; and

z is a numeral ranging between 1.005 to 1.05,

said crystallite containing at least two different doping substances therein, with a first doping substance being selected from a group consisting of antimony, bismuth, lanthanum, niobium, yttrium and a lanthanide and exhibiting in the interior of the crystallite a predominant donor property and with a second doping substance being selected from the group consisting of chromium, cobalt, copper, iron, manganese, nickel and vanadium and exhibiting in the interior of the crystallite a predominant acceptor property;

said resistor being formed by substantially uniformly admixing appropriate starting materials yielding said barium titanate crystallite, converting said admixture into a converted doped barium titanate, grinding such converted doped barium titanate into relatively uniform size particles, forming a body from such particles, and sintering said body to obtain a final PTC resistor product which is characterized by the following features:

(A) said final PTC resistor product containing a total concentration of 0 to 2 gram atomic percent of said doping substance exhibiting an acceptor property;

(B) said final PTC resistor product containing so much of said doping substance exhibiting a donor property that the effective concentration of the total doping substances placed in a Perowskite lattice of said crystallite, pursuant to maintaining coarse granularity, is 0.35 to 5 gram atomic percent;

(C) the concentration of doping substances in said final PTC resistor product being such that n-conduction is present in the PTC product with a specific cold resistance of less than 10 ohm.cm, measured at 25° C.;

(D) said sintering of the formed body occurring over a space of time in an atmosphere which reduces the barium titanate and allows a sufficient grain growth to be attained; and,

(E) after cooling-off to a temperature below the sintering temperature, subjecting the so-cooled sintered body to a tempering process in an oxidizing atmosphere for a period of time until the number of barium vacancies generated in the material of said body is sufficient for the occurance of the PTC resistor property.

4,425,557
NON-CONTACT MAGNETIC POTENTIOMETER

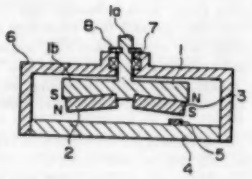
Shigekazu Nakamura, Ageo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Division of Ser. No. 285,330, Jul. 22, 1981. This application Aug. 2, 1982, Ser. No. 404,485

Claims priority, application Japan, Jul. 25, 1980, 55-101928; Jul. 25, 1980, 55-101929; Jul. 25, 1980, 55-101930

Int. Cl.³ H01L *43/04*

U.S. Cl. 338—32 H **12 Claims**



1. A non-contact magnetic potentiometer comprising:

a rotatable first yoke to which an angular displacement is to be transmitted,

a second yoke arranged as opposed to and spaced from said first yoke,

Hall effect means fixedly located in parallel with said second yoke between said first yoke and second yoke, and

a pair of permanent magnets magnetized in the thickness direction and secured as inclined to said Hall effect means on the first yoke surface opposed to said second yoke,

a Hall electromotive force corresponding to the angle of rotation of said first yoke being derived from said Hall effect means when said first yoke is rotated,

said Hall effect means including a pair of Hall effect devices arranged in positions displaced by an electrial angle of 90 degrees in the phase with respect to the axis of rotation of said first yoke,

operating means for adding the absolute values of the outputs of said pair of Hall effect devices, and

controlling circuit means for controlling said pair of Hall effect devices to make constant the value obtained from said operating means.

4,425,558
TIRE PRESSURE INDICATOR AND METHOD FOR DETECTING REDUCTION OF PRESSURE

William L. McConchie, McEntee Rd., R.D., Waitakere, New Zealand

Filed Jul. 27, 1981, Ser. No. 286,849

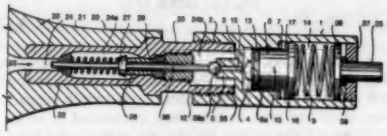
Claims priority, application New Zealand, Jul. 30, 1980, 194506

Int. Cl.³ B60C *23/00*

U.S. Cl. 340—58 **17 Claims**

1. An apparatus for detecting a reduction of the pressure in a pneumatic tire with a valve, including a sealable housing positionable over an opening of said tire valve, a release member therein adapted to open the head of the tire valve from the valve seat to release air into said housing, a pressure sensitive

member being provided in said housing adapted to activate a warning apparatus, the arrangement being such that in use, the apparatus may be positioned on a tire valve to open same and permit pressurization of said housing which positions said pressure sensitive member such that said warning apparatus is



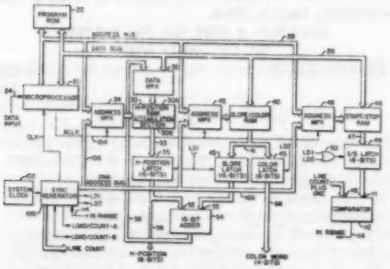
not activated and wherein a predetermined reduction of said pressure will operate said pressure sensitive member to activate said warning apparatus, and a testing means for independently activating the pressure sensitive member to test the operation of said warning apparatus.

4,425,559

METHOD AND APPARATUS FOR GENERATING LINE SEGMENTS AND POLYGONAL AREAS ON A RASTER-TYPE DISPLAY

David L. Sherman, Sunnyvale, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Jun. 2, 1980, Ser. No. 155,345
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—747 **11 Claims**



1. Apparatus for generating a plurality of individually, selectively orientable line segments on a video raster scan-type display screen scanned in successive frames by an image-forming beam traversing the screen along a plurality of horizontal lines, each line segment being formed by a generally linear locus of elemental points emanating from an initial elemental point defining an end of the line segment, each line segment being described by position data indicative of the location on the display screen of the initial elemental point of the line segment and direction data indicative of the incremental line-to-line change in horizontal position on the display screen of the line segment, the apparatus comprising:

first memory means for storing the position data and the direction data for each of the line segments;

means coupled to the first memory means for receiving said position data and said direction data for each line segment and for calculating therefrom a plurality of sums each corresponding to the horizontal position of each elemental point of each line segment;

means for providing a data word corresponding to each line segment indicative to the luminance of the line segment on the display screen;

second memory means coupled to said calculating means and the providing means and responsive to the calculated sums corresponding to each elemental point for storing the data word at memory locations corresponding to the position of the elemental point on the display screen; and

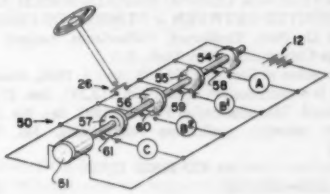
means for sequentially scanning said second memory means in synchronism with said beam scan for delivering an output display signal when the position of the beam corresponds to the memory location containing the data word of said line segment point.

4,425,560

HIGHWAY HAZARD WARNING SIGN SIGNAL

Robert W. Jones, 21017 Aberdeen Rd., Rocky River, Ohio 44116

Continuation-in-part of Ser. No. 247,733, Mar. 26, 1981, abandoned, which is a continuation of Ser. No. 814,230, Jul. 11, 1977, abandoned. This application Jun. 1, 1982, Ser. No. 383,555
Int. Cl.³ B60Q *1/00*; H01H *9/00*
U.S. Cl. 340—74 **4 Claims**



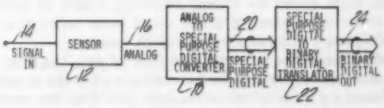
1. A highway hazard warning signal for use with a motor vehicle having a driver's compartment and a steering wheel including in combination a plurality of illumination means, a first of said plurality of illumination means being located at a generally central position on said signal, a second of said plurality of illumination means being arranged annularly around said first plurality, a third of said plurality of illumination means being arranged annularly around said second plurality, and means for energizing said plurality of illumination means progressively from said third to said second to said first plurality and then repeating the sequence.

4,425,561

METHOD AND APPARATUS FOR CONVERSION OF SIGNAL INFORMATION BETWEEN ANALOG AND DIGITAL FORMS

Arliss E. Whiteside, Royal Oak, and William G. Wolber, Southfield, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 911,603, Jun. 1, 1978, Pat. No. 4,318,085. This application Nov. 24, 1981, Ser. No. 324,716
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **34 Claims**



1. A method for converting an analog signal to an equivalent digital word in an n-bit digital word code where each of the bits in the n-bit digital word is dependent upon its bit position, the method comprising:

storing in an addressable storage array all of said n-bit digital words, each n-bit word stored in at least one storage location addressable by a special purpose (n+m)-bit digital word code and each n-bit word corresponding to a predetermined value of an analog signal and at least one corresponding (n+m)-bit digital word code, each n-bit in said (n+m)-bit digital word code is dependent upon its bit position and the weight of the n-bit positions are related to one another with

a predetermined ratio and said m-bits are equal to one another and repetitive of selected lower order n-bits;

converting the analog signal to the corresponding special purpose (n+m)-bit digital word code with an (n+m)-bit analog-to-digital converter, the weight of each n-bit in the (n+m)-bit digital word code being dependent upon its bit position, and the weight of the n-bit positions being related to one another with said same predetermined ratio and said m-bits being equal to one another and repetitive of said same lower order n-bits; and addressing said addressable storage array with said corresponding (n+m)-bit digital word code to output the n-bit digital word corresponding to the analog signal.

4,425,562

DEVICE FOR CODING SIGNALS WHICH ARE DISTRIBUTED BETWEEN A NUMBER OF CHANNELS

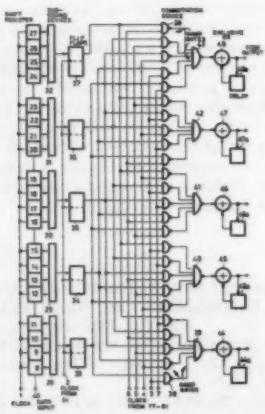
Edmond De Niet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 136,238, Apr. 1, 1980, abandoned, which is a continuation of Ser. No. 913,297, Jun. 27, 1978, abandoned. This application Feb. 22, 1982, Ser. No. 350,835

Claims priority, application Netherlands, Jul. 7, 1977, 7707540

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DD **4 Claims**



1. A device for introducing digital signals into a medium having at least bivalent states, comprising:

clock means;

data input means for serially receiving a flow of data bits under the control of a first clock pulse series at a first frequency generated by said clock means;

coding means for receiving said flow of data bits from said data input means and for generating n code bits in parallel based on running selections from said data bits received under control of a second clock pulse series at a second frequency generated by said clock pulse means, said second frequency being n/p times lower than said first frequency, wherein p is greater than 1;

commutation means having n inputs connected to said coding means for receiving said generated n code bits, said commutation means being provided for cyclically commuting synchronously with said second clock pulse series the sequence of said n code bits to m=j×n outputs thereof, wherein j is an integer and wherein each of the n code bits received at said inputs is presented to at least one of said m outputs, said m outputs being connected to m input channels of said medium for the transmission of the code bits at said m outputs.

4,425,563

SWITCH CIRCUIT ARRANGEMENT

Koichi Nakayama, Hatoyama, and Yasuo Fukitani, Sakado, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Sep. 15, 1981, Ser. No. 302,649

Claims priority, application Japan, Sep. 16, 1980, 55-128395

Int. Cl.³ G08B *5/36*

U.S. Cl. 340—644 **4 Claims**

1. A switch circuit arrangement comprising at least one display lamp comprising a light emission diode; at least one switch provided with a self-restore type switch contact; said display lamp and said switch being connected in series with each other; a drive circuit for driving said display lamp, said drive circuit being connected in parallel between the connection point between said switch contact and said display lamp and the other end of said switch contact; a detector circuit comprising an I^2L element and transistor provided at the input side thereof, the collector of the transistor being connected to the input terminal of said I^2L element, said detector circuit being provided at the base thereof with potential variations resulting from the opening and closure of said switch, thereby detecting the actuation of the switch; and a memory circuit comprising an I^2L element for storing a control signal derived from said detector circuit, wherein said control signal is transmitted to a controlled device as well as to said drive circuit, whereby said display lamp is lit and maintained in the lit state.

4,425,564

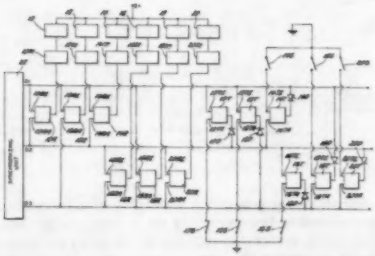
MULTIPLEX WIRING SYSTEM FOR MOTOR VEHICLES

Robert E. Steele, Cortland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1981, Ser. No. 317,788

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.79 **4 Claims**



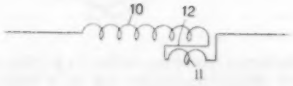
1. An electrical system for controlling (n^2-1) load devices said system comprising a plurality of data lines (n), synchronizing means for applying an enabling voltage for a predetermined time interval to each of said data lines in sequence while applying a deactivating voltage to the remaining data lines, load control means associated with each of said load devices and including receiver gate means, transmitter gate means, and a manually actuable switch means, said receiver gate means and transmitter gate means having first and second inputs, said receiver gate means and said transmitter gate means adapted to be activated in response to concurrent application of an enabling voltage to its first input and an activating voltage to its second input, the first input of said receiver gate means connected to a first data line, the second input of said receiver gate means connected with a second line whereby said receiver gate means is periodically enabled but simultaneously deactivated by said synchronizing means, the first input of said transmitter gate means connected to said first data line and the second input of said transmitter gate means connected with said switch means whereby said transmitter gate means is enabled by said synchronizing means simultaneously with said receiver gate means, said switch means adapted to apply an activating voltage to said second input of said transmitter means in response

to operation thereof, said transmitter gate means responsive to operation of said switch means for overriding the deactivating voltage and applying an activating voltage to said second data line to activate the receiver gate means, means for energizing a load device in response to activation of said receiver gate means, memory means associated with each of said load devices for maintaining energization of its associated load device for an interval of time at least as long as that existing between successive applications of said enabling voltage to said receiver and transmitter gate means.

4,425,565
MULTIPLE RESONANT COIL USING DISTRIBUTED CAPACITY BETWEEN TURNS

Robert H. Johns, 3379 Papermill Road, Huntingdon Valley, Pa. 19006

Continuation-in-part of Ser. No. 327,359, Dec. 4, 1981, which is a continuation-in-part of Ser. No. 249,440, Mar. 31, 1981, Pat. No. 4,334,228, which is a continuation-in-part of Ser. No. 222,241, Jan. 2, 1981, Pat. No. 4,335,386, which is a continuation-in-part of Ser. No. 162,928, Jul. 17, 1980, abandoned. This application May 3, 1982, Ser. No. 373,857
The portion of the term of this patent subsequent to Jun. 5, 1999, has been disclaimed.
Int. Cl.³ H01Q *1/00*
U.S. Cl. 343—722 **3 Claims**



1. A circuit having more than one resonant frequency comprising

a pair of circuit connection wires,

a main coil of insulated wire,

a second coil of insulated wire having fewer than half the number of turns of said main coil, capacitively coupled to said main coil near one end of said main coil, with an electrical cross-connection joining opposite ends of said main coil and said second coil, whereby the self-resonance of the main coil is one of the resonant frequencies of the multiple frequency circuit and the resonant frequency of the second coil together with the portion of the main coil that is coupled to it is another resonant frequency of the multiple frequency circuit,

electrical connections between said circuit connecting wires and one end of said main coil and one end of said second coil that are not part of said cross-connection.

4,425,566
ANTENNA ARRANGEMENT FOR PROVIDING A FREQUENCY INDEPENDENT FIELD DISTRIBUTION WITH A SMALL FEEDHORN

Corrado Dragone, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 31, 1981, Ser. No. 297,842
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—781 P **5 Claims**

1. An antenna arrangement capable of obtaining a substantially frequency independent field distribution over a large aperture, the antenna arrangement comprising:

a main parabolic reflector (10) comprising a focal point (F_1) and a predetermined aperture (D) and capable of converting a spherical wavefront centered at the focal point into a planar wavefront at the aperture; and

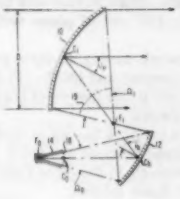
a feed (14) comprising a predetermined aperture and capable of launching a spherical wavefront (18) having a predetermined apex (F_0)

characterized in that

the antenna arrangement further comprises:

subreflecting means (12, 20) comprising a first focal point (F_1) disposed confocally with the focal point of the main parabolic reflector and a separate second focal point (F_0) along a feed axis of the subreflecting means and capable of transforming a spherical wavefront at said separate second focal point into a spherical wavefront at said first focal point; and

the feed is disposed with the apex of the spherical wavefront capable of being launched therefrom located at the second focal point of the subreflecting means and an aperture

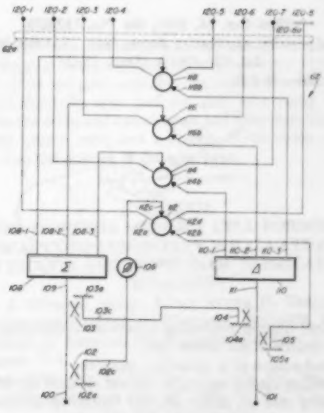


surface of the feed is disposed at an image surface of the main reflector, with the image of the main reflector being substantially centered on the aperture of the feed and where each separate image point on the image surface is derived from a series of rays emanating spherically outward in slightly different directions from a separate associated point on the reflecting surface of the main reflector which rays, after being reflected by the subreflecting means, will recombine at the separate image point.

4,425,567
BEAM FORMING NETWORK FOR CIRCULAR ARRAY ANTENNAS

Carl P. Tresselt, Towson, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 28, 1981, Ser. No. 306,018
Int. Cl.³ H01Q *3/36, 3/40*; G01S *1/14*
U.S. Cl. 343—373 **7 Claims**



1. A beam forming network for an antenna array for generating antenna weights and including N output terminals, one of which is terminated by a characteristic impedance, the antenna weights being generated at the other output terminals, comprising:

a first input terminal;

a second input terminal;

N/2 signal splitters having first and second input ports and first and second output ports connected respectively to individual ones of said output terminals, said signal splitters being characterized in that a signal applied to said first input port is split according to a predetermined coupling factor to said first and second output ports with the resultant signals at said first and second output ports essentially in phase with one another and in that a signal applied to said second input port is split according to the predetermined coupling factor to said first and second output ports with the resultant signals at said first and second output ports essentially 180° out of phase with respect to one another;

a sum pattern network having an input port connected to said first input terminal and (N/2 −1) output ports connected respectively to the first input ports of all but a first of said signal splitters;

a difference pattern network having an input port connected to said second input terminal and (N/2 −1) output ports connected respectively to the second input ports of all but said first of said signal splitters;

means for coupling said first input terminal to the first input port of said first of said signal splitters and including means for shifting the phase of a signal coupled between said first input terminal and said first signal splitter by a predetermined phase angle;

means unidirectionally coupling said second input terminal to the input port of said sum pattern generator while not coupling the input port of said sum pattern generator to said second input terminal; and,

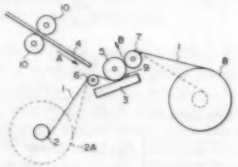
means coupling said second input terminal and the second input port of said first signal splitter whereby excitation of said first input terminal generates weights corresponding to a sum antenna pattern having omnidirectional side lobes at said output terminals and excitation of said second input terminal generates weights corresponding to a difference antenna pattern having omnidirectional sidelobes at said output terminals.

4,425,568

HEAT TRANSFER RECORDING APPARATUS

Fujio Moriguchi; Yoshiki Kikuchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,025
Claims priority, application Japan, Nov. 17, 1980, 55/160797
Int. Cl.³ G01D *15/10, 15/24*
U.S. Cl. 346—76 PH **2 Claims**



1. A heat transfer recording apparatus, comprising:

a first source of ink donor film;

a second source of a recording medium;

a recording station having a thermal element for selectively heating said ink donor film for recording information on said recording medium by heat transfer;

a transport system for bringing said donor film and recording medium into contact for movement in the same direction at least in the vicinity of said thermal element, said transport system including a stress absorbing roller across which said donor film passes between said first source and thermal element, a back roll across which said recording medium and said ink donor film pass in the vicinity of said thermal element and

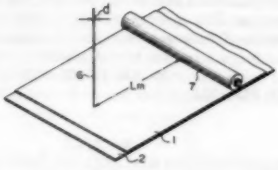
a support member for rotatably supporting said stress absorbing roller at either end, said support member being pivotably mounted substantially at its center so that the axis of said stress absorbing roller can be inclined in either direction with respect to the plane of said donor film as said film passes said thermal element.

4,425,569

NON-IMPACT RECORDING METHOD AND APPARATUS

Toshiyuki Kawanishi, and Yukio Tabata, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,308
Claims priority, application Japan, May 19, 1981, 56-75988
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **8 Claims**



1. A non-impact recording method for printing with electroconductive thermal-transferable ink on a receiving surface, comprising the steps of:

superimposing on a receiving surface of a recording sheet an ink ribbon comprising a layer of an electroconductive and thermal-transferable ink material;

placing a recording electrode means comprising a plurality of recording styli in contact with said ink ribbon, and a return electrode in contact with said ink ribbon, said return electrode disposed at a predetermined distance from said recording electrode means, substantially parallel to said recording styli, with the total contact area with said ink ribbon of said recording styli being smaller than the contact area with said ink ribbon of said return electrode, which predetermined distance is in the range of $2 \times d \leqq Lm \leqq 200 \times d$, where d represents the diameter of each recording stylus of said recording electrode means, and Lm represents the minimum distance between each recording stylus and said return electrode; and

applying between selected recording styli and said return electrode image-delineating electric current so as to generate Joule's heat in the portions in said ink ribbon immediately below said selected recording styli; and

transferring the electroconductive thermal-transferable ink material from said ink ribbon to said receiving surface of said recording sheet.

4,425,570

REVERSIBLE RECORDING MEDIUM AND INFORMATION RECORD

Alan E. Bell, and Yehuda Arie, both of East Windsor, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,251
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **13 Claims**

1. In a recording medium comprising a substrate and a light absorptive layer which overlies the substrate and which is absorptive of light at the recording light beam wavelength, the improvement wherein said absorptive layer comprises one or more domains of a light absorbing material, which can be

reversibly switched from a first state to a second state having different optical properties, embedded in a matrix of a material

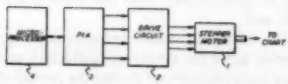
effective for inhibiting an irreversible change in the optical properties of the light absorbing material.

4,425,571

CHART RECORDER

William C. Mueller, La Grange Park, and Larry Plunkett, Rellwood, both of Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 3, 1982, Ser. No. 354,407
Int. Cl.³ G01D *15/24*; G05B *19/29*
U.S. Cl. 346—136 **3 Claims**



1. In a strip-chart recorder, means initiated by operator command for advancing a recorder chart to a predetermined starting position without residual backlash comprising, in combination:

a pulse driven motor for driving the strip chart,

means for supplying drive pulses to said motor, said drive pulse supplying means having a microprocessor controlled pulse drive circuit,

means for counting, said counting means being effective to count the number of said drive pulses,

means for resetting said counting means, said resetting means initially resetting said counter means to zero count when the recorder pen is at any chosen starting point and subsequently to repeat said reset each time said counting means reaches a predetermined count; and

said microprocessor and said counter means being operative, upon operator command, to drive said motor forward to the point at which said counter again reaches zero.

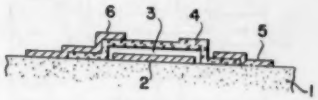
4,425,572

THIN FILM TRANSISTOR

Yutaka Takafuji; Keisaku Nonomura, both of Nara; Sadatoshi Takechi, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha and Japan Electronic Industry Development Association, both of Osaka, Japan

Filed May 7, 1981, Ser. No. 261,545
Claims priority, application Japan, May 16, 1980, 55-65720
Int. Cl.³ H01L *45/00, 29/78, 23/48*
U.S. Cl. 357—4 **4 Claims**

1. A thin film transistor comprising in combination a substrate having source and drain electrodes formed thereon, a semiconductor layer making contact in part with said source electrode and in part with said drain electrode, a gate electrode, and a gate insulating layer positioned between said semiconductor layer and said gate electrode, said semiconductor layer interpositioned between said substrate and said drain and source electrodes and overlying said gate electrode wherein said drain electrode is held in an overlapping relation-



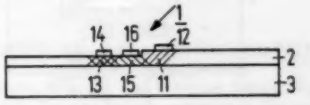
ship above a portion of a first edge of said gate electrode and said source electrode is spaced apart laterally from a second edge of said gate electrode so as not to overlap said gate electrode, such that the resulting transistor will exhibit a reliable performance for a prolonged period of time without dielectric breakdown occurring in said insulating layer or reduction in the ON-OFF ratio.

4,425,573

METAL-SEMICONDUCTOR-FIELD EFFECT TRANSISTOR (MESFET) WITH LIGHTLY DOPED DRAIN CONTACT REGION FOR HIGHER VOLTAGE BREAKDOWN

Dietrich Ristow, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 38,895, May 14, 1979, Pat. No. 4,325,747.
This application Nov. 25, 1981, Ser. No. 324,978
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821975
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **5 Claims**



1. A metal-semiconductor field effect transistor (MESFET), comprising: a semiconductor material having highly doped source, drain and gate areas therein; the three areas having the same conductivity type and the gate area being positioned between the drain and source areas and being less highly doped than the source area; and a doping of the drain area being lower than the doping of the gate area.

4,425,574

BURIED INJECTOR MEMORY CELL FORMED FROM VERTICAL COMPLEMENTARY BIPOLAR TRANSISTOR CIRCUITS AND METHOD OF FABRICATION THEREFOR

Victor J. Silvestri, Mount Kisco; Denny D. Tang, Yorktown Heights, and Siegfried K. Wiedmann, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 53,486, Jun. 29, 1979, Pat. No. 4,274,891.
This application Jun. 12, 1981, Ser. No. 272,877
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—50 **7 Claims**

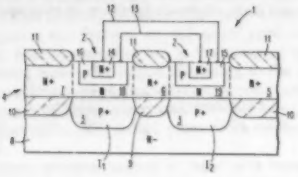
1. A vertical pair of complementary bipolar transistors comprising:

a semiconductor substrate of one conductivity type,

a pair of dielectric isolation regions disposed in contiguous relationship with said substrate,

an injector region of opposite conductivity type disposed between said pair of isolation regions,

a pair of heavily doped, polycrystalline semiconductor regions of said one conductivity type disposed over and in registry with said pair of isolation regions,



a single crystal semiconductor region of said one conductivity type disposed over and in registry with said injector region, and,

a first zone of said opposite conductivity type disposed in said single crystal region and a second zone of said one conductivity type disposed in said first zone.

4,425,575

BASE FOR ENCAPSULATING COMPONENTS WITH COPLANAR ELECTRODES

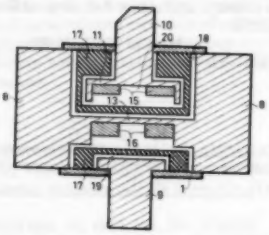
Jean Doyen; Philippe Morel, and Jean C. Resneau, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 26, 1981, Ser. No. 315,269

Claims priority, application France, Oct. 31, 1980, 80 23381

Int. Cl.³ H01L *23/02, 39/02, 23/16, 23/48*

U.S. Cl. 357—81 **7 Claims**



1. A base for encapsulating components with coplanar electrodes, comprising a metal mounting stud, an insulating plate and connecting electrodes hard soldered to metallizations deposited on the insulating plate, wherein at least one of the connecting electrodes comprises an abutment zone against which is placed at least one component welded to a metallization of the insulating plate.

4,425,576

PICTURE STABILIZING CIRCUIT IN COLOR TELEVISION RECEIVER

Nobukazu Hosoya, Nara, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 3, 1981, Ser. No. 299,119

Claims priority, application Japan, Sep. 12, 1980, 55-127461

Int. Cl.³ H04N *9/535*

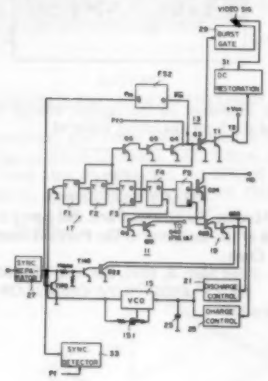
U.S. Cl. 358—21 V **11 Claims**

1. A picture stabilizing circuit in a color television receiver, comprising:

a vertical synchronizing circuit of a pulse count system including counter means for making a count operation responsive to one of a horizontal synchronizing signal and a signal associated with the horizontal synchronizing signal in terms of the phase and the frequency,

reset means responsive to any of a vertical synchronizing signal and a predetermined output of said counter means for resetting said counter means,

ineffective rendering pulse generating means responsive to a count value in said counter means for generating an ineffective rendering pulse covering at least a vertical synchronization pulse period,



at least one picture associated circuit receiving one of a composite synchronizing signal and a horizontal period signal in synchronism with the composite synchronizing signal, and

ineffective rendering means responsive to said ineffective rendering pulse for rendering ineffective said at least one picture associated circuit during the period of said ineffective rendering pulse.

4,425,577

TELEVISION CAMERA EQUIPPED WITH A COLOR-SEPARATING ARRANGEMENT DISPOSED BEHIND THE OBJECTIVE

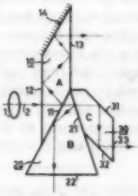
Franciscus H. M. Bergen; Wolter W. J. Degger, and Sing L. Tan, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1981, Ser. No. 326,865

Claims priority, application Netherlands, Dec. 4, 1980, 8006609

Int. Cl.³ H04N *9/09*

U.S. Cl. 358—55 **6 Claims**



1. A television camera comprising:

an objective;

a color-separating prism assembly disposed behind the objective, said assembly having an entrance surface and three exit surfaces, light entering the assembly through the entrance surface being separated into different colors emerging from the exit surfaces;

three camera tubes, one tube arranged in the path of light emerging from each exit surface;

characterized in that the prism assembly comprises:

a first prism having an optical axis and a plurality of planar surfaces, one such surface being an entrance surface perpendicular to the optical axis, one other surface having a dichroic layer thereon; and

a second prism having a plurality of planar surfaces, one surface having a dichroic layer thereon;

wherein the surface of the first prism bearing the dichroic layer is arranged adjacent a surface of the second prism without a dichroic layer thereon, said adjacent surfaces being separated by an air gap, said first and second prisms arranged so that the optical axis passes through both dichroic layers;

wherein the surface of the first prism bearing the dichroic layer subtends an angle less than 30° with a plane perpendicular to the optical axis; and

wherein the first prism has at least one other surface parallel to the surface of the first prism bearing the dichroic layer.

4,425,578

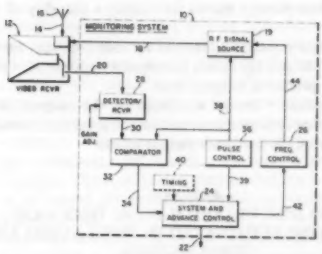
MONITORING SYSTEM AND METHOD UTILIZING SIGNAL INJECTION FOR DETERMINING CHANNEL RECEPTION OF VIDEO RECEIVERS

Donald E. Haselwood, and Jeffrey R. Thumm, both of Clearwater, Fla., assignors to A. C. Nielsen Company, Northbrook, Ill.

Filed Jan. 12, 1981, Ser. No. 224,586

Int. Cl.³ H04M *1/00*

U.S. Cl. 358—84 **34 Claims**



1. Apparatus for determining the video channel of a plurality of predetermined channels to which a video receiver is tuned, said video receiver including a signal input for the video channel carrier signals of said predetermined channels, channel selection and tuning apparatus, and a video circuit, said apparatus comprising:

signal source means being selectively controllable and coupled to said signal input of said video receiver for generating one of a predetermined plurality of signal frequencies in a predetermined frequency set, each of said signal frequencies in said predetermined frequency set corresponding to one of said predetermined channels tuned by said video receiver and defined by a predetermined offset frequency f_r from each of said channel frequencies;

means for controlling said signal source generating means; and

means responsive to said video receiver for detecting a predetermined detection frequency signal f_r resulting from the combination of the signal generated by said signal source generating means and the video carrier signal corresponding to the channel to which said video receiver is tuned,

said signal source controlling means comprising means for advancing said signal source generating means to generate successive ones of said signal frequencies at predetermined time intervals.

4,425,579

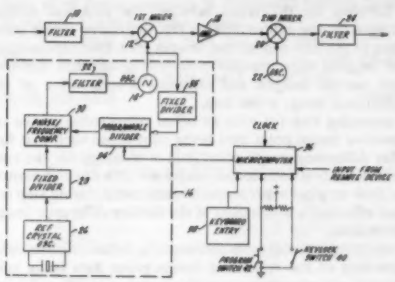
CATV CONVERTER WITH KEYLOCK TO FAVORITE CHANNELS

Richard G. Merrell, Hebron, Ill., assignor to Oak Industries Inc., Rancho Bernardo, Calif.

Filed May 22, 1981, Ser. No. 266,166

Int. Cl.³ H04N *1/00*

U.S. Cl. 358—86 **3 Claims**



1. Cable TV converter means for selection of a specific input channel for conversion to an output frequency, including oscillator and mixer means for conversion of an input television channel to an output frequency, program selection means controlling said oscillator means, memory means responsive to said program selection means whereby a subscriber may designate certain channels for conversion to said output frequency, said program selection means and memory means permitting sequential preview of the designated channels by a subscriber, and means for restricting access of said program selection means to only those designated channels in said memory means including means for causing said memory and program selection means to convert only designated input channels to said output frequency upon selection of a non-designated channel.

4,425,580

DIAGNOSTIC X-RAY INSTALLATION FOR PROVIDING SUBTRACTION IMAGES

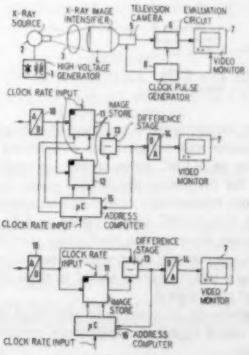
Joerg Haendle, Erlangen, and Wolfgang Maass, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,037

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043703

Int. Cl.³ H04N *5/32*

U.S. Cl. 358—111 **3 Claims**



1. The method of producing a resultant image from sets of

image point data representing successive images of a patient obtained by means of a patient diagnostic installation including an image point memory, said method comprising

(a) obtaining a first image of a body region of a patient prior to filling with a contrast medium, and obtaining a second image of the body region after filling with the contrast medium,

(b) storing at least the first image as a set of image point data in the image point memory,

(c) forming the difference between the first and second images by the subtraction of the respective image point data of the first and second images for a case representing an original superposition relationship between the first and second images, and effecting a summation of the difference image point data,

(d) repeating step (c) with an offset relationship of the respective image point data being subtracted such that further difference image point data is obtained for the case where the first and second images are offset in comparison to their original superposition relationship during step (c), and effecting a summation of the further difference image point data,

(e) repeating step (d) with successively different offset relationships of the respective image point data being subtracted, and obtaining respective summation values for the respective different offset relationships,

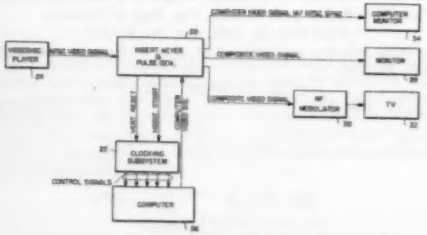
(f) comparing the respective summation values obtained in step (e), and selecting the offset relationship of the first and second images giving the minimum summation value, and

(g) displaying the difference image point data corresponding to the selected offset relationship as the desired resultant image.

4,425,581
SYSTEM FOR OVERLAYING A COMPUTER GENERATED VIDEO SIGNAL ON AN NTSC VIDEO SIGNAL

Darrell L. Schweppe, and Hermann K. Siegl, both of Lincoln, Nebr., assignors to Corporation For Public Broadcasting, Washington, D.C.

Filed Apr. 17, 1981, Ser. No. 255,039
Int. Cl.³ H04N *5/04, 5/22, 5/14*
U.S. Cl. 358—148 **21 Claims**



1. A system, operatively connected to a computer for providing a computer video signal, for overlaying the computer video signal on an NTSC video signal, comprising:

first means for providing the NTSC video signal;

second means, operatively connected to said first means, for receiving the NTSC video signal and for generating a vertical reset signal and a horizontal start signal;

third means, operatively connected to said second means, for generating a clock control signal in dependence upon the horizontal start signal;

a clock, operatively connected to said third means, for generating a clock signal in dependence upon the clock control signal;

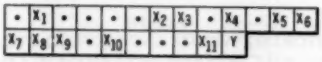
fourth means, operatively connected to said clock, said second means and the computer, for generating control signals for controlling the read out of the computer video signal by the computer, the control signals being generated in dependence upon the clock signal and the vertical reset signal;

fifth means, operatively connected to said first means and to the computer, for receiving the NTSC video signal and the computer video signal, and for generating a composite video signal.

4,425,582
HARDWARE IMPLEMENTATION OF 2 LINE/11 ELEMENT PREDICTOR

Vinod K. Kadakia, Torrance, and Glen D. Jones, Orange, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 165,814, Jul. 3, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,815
Int. Cl.³ H04N *1/41;* **H03K** *13/243*
U.S. Cl. 358—260 **10 Claims**



1. A one-shot predictor circuit for mixed mode documents comprising:

a first-in, first-out buffer for delaying the input bit nibbles by one raster scan line,

a previous line storage means for storing a plurality of nibbles delayed by said buffer,

a current line storage means for storing a plurality of input nibbles,

a first memory means addressed by said previous line and current line storage means to output a multiple of m bits of possible predictor outputs, and

a second memory means addressed by the outputs of said current line storage means and said first memory means to output an n bit predictor output nibble.

4,425,583
VIDEO DISC PLAYER HAVING TIME BASE VARIATIONS ELIMINATED IN BOTH AUDIO AND VIDEO SIGNALS

Hitoshi Kanamaru, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed May 5, 1981, Ser. No. 260,614
Claims priority, application Japan, May 6, 1980, 55-60610[U]
Int. Cl.³ H04N *9/491*
U.S. Cl. 358—322 **6 Claims**

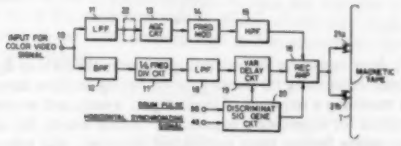
1. A video disc player for reproducing video and audio signals recorded on a disc comprising: means for rotating a disc to be played; a mirror for directing a beam of light onto a recorded track on said disc to be played; an electromagnetic actuator for controlling a tilting angle of said mirror to tangentially adjust said beam relative to said recorded track; means for producing a reproduced electrical video signal in response to light reflected from said recording track; means for separating a horizontal synchronizing signal contained in said reproduced video signal from said reproduced video signal; means for separating a color burst signal contained in said reproduced video signal from said reproduced video signal; means for producing first and second reference synchronizing signals, said first reference synchronizing signal having a frequency corresponding to a predetermined horizontal synchronizing frequency and said second reference synchronizing signal having a frequency corresponding to a predetermined color burst frequency; first phase comparing means for producing a first control signal representing a phase difference between the horizontal synchronizing signal separated from said reproduced video signal and said first reference synchronizing signal; first control means for controlling said electromagnetic

actuator in response to said first control signal; an electronically-controlled variable delay line for delaying said reproduced video signal; second phase comparing means for producing a second control signal representing a phase difference between the color burst signal separated from said video signal and said second reference synchronizing signal; and second control means for establishing the delay time of said electronically-controlled variable delay line in response to said second control signal for thereby establishing a delay time of said reproduced video signal between said reproducing video signal producing means and a video output terminal.

4,425,584
VIDEO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM

Akira Hirota, Chigasaki, and Takashi Uchimi, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 20, 1981, Ser. No. 245,663
Claims priority, application Japan, Mar. 21, 1980, 55-35853
Int. Cl.³ H04N 5/782
U.S. Cl. 358—328 **6 Claims**



1. A video signal recording and/or reproducing system for successively recording a video signal onto mutually adjacent parallel tracks on a recording medium and for reproducing said video signal from said recording medium, said video signal recording and/or reproducing system comprising:

discriminating signal generating circuit means for generating a plurality of first discriminating signals respectively having a frequency 2nf which is 2n times a predetermined frequency f (n is an integer greater than one), and a plurality of second discriminating signals respectively having a frequency $(2n-1)f$;

mixing and multiplexing circuit means responsive to said discriminating signal generating circuit means for respectively and alternately selecting said first and second discriminating signals for every recording unit of one track so that the discriminating signals are different in the mutually adjacent tracks, and for mixing and multiplexing said first and second discriminating signals with said video signal;

recording means responsive to said discriminating signal generating circuit means for successively recording the multiplexed signal onto the mutually adjacent tracks on said recording medium;

reproducing means for reproducing the recorded multiplexed signal from said recording medium;

discriminating and reproducing means responsive to said reproducing means for discriminating and reproducing said first and second discriminating signals recorded in the reproducing tracks;

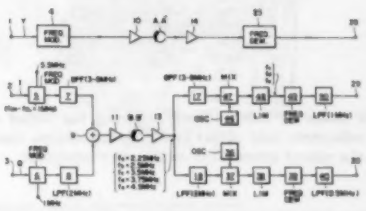
demodulating means responsive to the reproduced signal supplied by said reproducing means for demodulating the video signal; and

processing means for processing at least a part of said video signal according to a predetermined rule upon recording and for subjecting the reproduced signal to a processing under a rule which is complementary to the rule under which the processing is carried out during the recording upon reproduction, said processing using said first and second discriminating signals obtained from said discriminating and reproducing means to minimize mutual interference introduced between mutually adjacent tracks upon recording and reproduction.

4,425,585
VIDEO TAPE RECORDER IMMUNE TO THIRD-ORDER DISTORTION NOISE

Kunio Sekimoto, Katano; Katsuhiko Yamamoto, Neyagawa; Chojuro Yamamitsu, Kawanishi, and Kozo Kurashina, Yahata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Apr. 13, 1981, Ser. No. 253,883
Claims priority, application Japan, Apr. 14, 1980, 55-49378
Int. Cl.³ H04N 9/491; G11B 5/02
U.S. Cl. 358—328 **12 Claims**



1. A video tape recorder having a transducer head on a rotating cylinder, said transducer head having a characteristic to produce third-order distortion noise components in the output signal thereof, comprising:

first means for frequency modulating a high frequency carrier with a first chrominance signal, said modulated high frequency carrier being applied to said transducer head;

second means for frequency modulating a low frequency carrier with a second chrominance signal, said modulated low frequency carrier being applied to said transducer head to record said modulated carriers onto a recording medium in frequency-division multiplex;

third means receptive of the output signal of said transducer heads for frequency demodulating said modulated high frequency carrier so that the demodulated high frequency carrier has a bandwidth of a first predetermined value; and

fourth means receptive of said output signal for frequency demodulating said modulated low frequency carrier so that the demodulated low frequency carrier has a bandwidth of a second predetermined value,

wherein said high and low frequency carriers have such frequencies that the frequencies of said third order distortion noise components differ from the frequencies of the demodulated carriers by amounts greater than the bandwidths of said first and second predetermined values.

4,425,586
APPARATUS AND METHOD FOR STORING AND INTERRELATING VISUAL DATA AND COMPUTER INFORMATION

Richard L. Miller, 233 Broadway, Suite 3612, New York, N.Y. 10007

Filed Mar. 13, 1981, Ser. No. 243,577
Int. Cl.³ H04N 5/76
U.S. Cl. 358—335 **13 Claims**

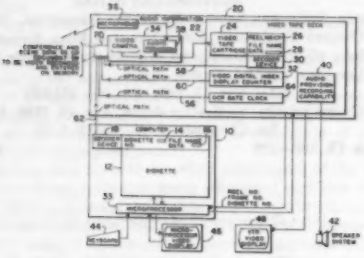
1. An information storage system, comprising:

(a) a video tape recorder subsystem for recording and storing information of a visual nature at specified video addresses for subsequent visual display;

(b) a computer subsystem for recording and storing related data information at specified data addresses for subsequent output;

(c) interfacing means interconnecting said video tape recorder subsystem and said computer subsystem for caus-

ing both said subsystems to automatically record and store the address location of information being recorded in its own subsystem as well as the address location of the related information being recorded in the other subsystem; and



(d) means for independently obtaining the output of each subsystem, said output including the address location of the related information on the other subsystem.

4,425,587

VIDEODISC PLAYBACK APPARATUS

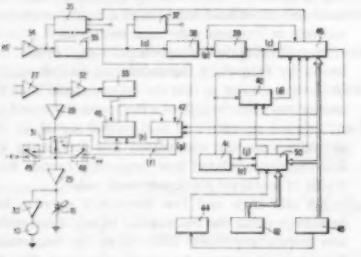
Hirotaka Kurata, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,708

Claims priority, application Japan, Oct. 13, 1980, 55-143460

Int. Cl.³ H04N *5/76*; G11B *21/08*

U.S. Cl. 358—335 **5 Claims**



1. In a videodisc playback system of the type having means to mount and rotate a videodisc on which are recorded composite video signals in a spiral track, sensing means for reading the video signals from the spiral track to effect playback at a normal speed, shifting means for shifting the position of said sensing means along a radial of the videodisc, control means for controlling said shifting means so that (a) the scanning position of the read-out device is on the track or (b) the sensing means is shifted from one track to another, the improvement where said control means includes means for fast playback of said videodisc by a factor N times faster than the normal speed where N is an integer equal to or greater than 2 including means for shifting tracks, one track at a time, to the next adjacent track, during one revolution of said videodisc, where the shifting means is shifted N−1 tracks for fast forward playback and N+1 times for fast backward playback, and means responsive to said fast playback means for repeatedly playing back a predetermined number of tracks where said predetermined number is an integral multiple of N.

4,425,588

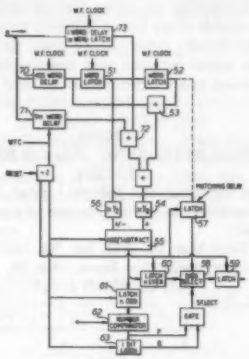
PROCESSING OF DIGITAL SIGNALS

John L. E. Baldwin, Hampshire, England

Filed Jan. 30, 1981, Ser. No. 230,034

Int. Cl.³ H04N *5/91, 5/21*

U.S. Cl. 358—340 **10 Claims**



1. In an apparatus for processing signals in the form of digital words, comprising (a) filtering means having an input terminal for receiving a sequence of input digital words, and an output terminal for supplying a sequence of filtered words; (b) selection means having input and output terminals, said selection means input terminal being connected with the output terminal of said filtering means, said selection means being operable to omit predetermined words from the sequence thereof and for supplying a reduced number of digital words to said selection means output terminal; and (c) output means connected with said selection means output terminal for acting upon the reduced number of words;

the improvement which comprises

(d) monitoring means connected with the input terminal of said filtering means for determining if the input digital words have a characteristic similar to the filtered words; and

(e) bypass means operable by said monitoring means when said monitoring means determines that an input digital word has a characteristic similar to a filtered word for causing the input digital word to bypass said filter means and thereby remain in the non-altered condition.

4,425,589

RECORD MEDIUM TRANSDUCING ERROR CORRECTION SYSTEM AND METHOD

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Apr. 23, 1981, Ser. No. 256,733

Int. Cl.³ G11B *5/09, 5/02*

U.S. Cl. 360—51 **1 Claim**

1. A method of recording and reproducing information where the original signal has a high data rate exceeding the capability of a recording and reproducing system that is subject to mechanical variations in its record tape configuration and in its transducer head units, said method comprising:

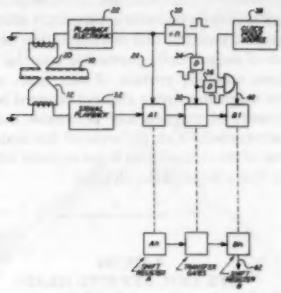
pre-processing the signal in a buffer that receives data words at the high rate so as to store the data words in a succession of registers of the buffer,

reading out from the registers of the buffer contemporaneously, and recording the data from the respective registers on respective channels of the record tape at a lower rate within the capability of the recording and reproducing system, together with clocking pulses synchronized with the data on each channel,

scanning the recorded channels of the record tape to repro-

duce the data together with the synchronized clocking pulses,

reading the data from each channel into a respective register, clocked by the reproduced clocking pulses, and



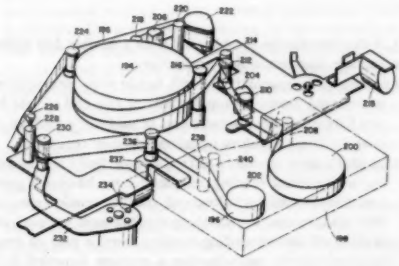
reading out the original information from the registers in series at the high data rate by means of accurate clock pulses at the corresponding high rate to reconstruct the original signal.

4,425,590

VIDEO CASSETTE RECORDER

Gregg M. Johnstone, R.F.D. 2, Squash Hollow Rd., New Milford, Conn. 06776, and Harry Davies, #6 Acre Dr., Danbury, Conn. 06810

Filed Nov. 2, 1981, Ser. No. 317,293
Int. Cl.³ G11B *5/008*
U.S. Cl. 360—71 **14 Claims**



9. A method of transporting a recording medium from a video tape cassette in a recording and/or reproducing device to a position where a video signal can be recorded on or reproduced from said recording medium comprising the steps of:

a. placing the cassette in said device;

b. withdrawing the recording medium from said cassette and immediately thereupon placing the recording medium over recording and reproducing heads;

c. holding the recording medium at a predetermined value of tension until ready to record or reproduce information thereon;

d. increasing the tension of the recording medium to a value suitable for recording and playing back information on said recording medium;

e. moving the recording medium past the recording and reproducing heads at a given velocity; and

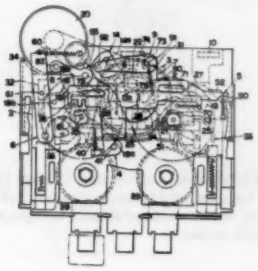
f. recording and/or reproducing information on said recording medium.

4,425,591

MAGNETIC RECORDING/REPRODUCING APPARATUS

Yukio Ito; Kazuki Takai, and Satoshi Takagi, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,277
Claims priority, application Japan, Jul. 8, 1980, 55-92313
Int. Cl.³ G11B *15/00, 21/02*
U.S. Cl. 360—88 **5 Claims**



1. A magnetic recording/reproducing apparatus which comprises:

a motor

a rotation transmitting means;

a cam means;

a first locking means normally engaged with said rotation transmitting means to lock the latter and disengageable therefrom to engage said motor with said cam means through said rotation transmitting means for transmitting rotating power of said motor to said cam means when said first locking means is released, thus to rotate said cam means;

a magnetic tape playing means;

a control means for shifting said magnetic tape playing means to a playing position in response to the rotation of said cam means; and

a second locking means for locking said control means at the playing position.

4,425,592

JET DISTRIBUTOR FOR END-WISE PNEUMATIC PARTITIONING OF DISK PACK

Herbert U. Ragle, Thousand Oaks, and Dean DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

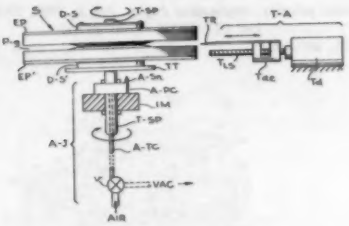
Continuation of Ser. No. 49,553, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 890,799, Mar. 27, 1978, Pat. No. 4,167,029, which is a continuation-in-part of Ser. No. 711,647, Aug. 4, 1976, Pat. No. 4,086,640. This application Jan. 26, 1981, Ser. No. 228,058
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.³ G11B *23/02, 25/04*
U.S. Cl. 360—99 **8 Claims**

1. In an improved arrangement for "end-wise" pneumatic partitioning of a pack of floppy disks, this pack including conduit means for conduction of pneumatic partitioning forces axially, up through the pack, to introduce a prescribed partition gap between selected adjacent disks; the arrangement comprising, in combination therewith;

pneumatic partitioning means arranged and adapted to selectively present partitioning thrust forces into at least a portion of said conduit means so as to introduce said gap between any selected adjacent pairs of said disks,

the partitioning means is outside the pack and is adapted to cooperate with one or more gas supply means and comprises: distributor means adapted to present an array of

conductor passage means adapted to register with said conduit means and be rotated in synchronism therewith; plus selector means adapted to present one or more input,



apertures in gas-conducting relation with a selected one, or ones, of said passage means, each of said apertures being in communication with a respective one of said gas supply means.

4,425,593

MAGNETORESISTIVE HEAD

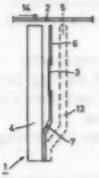
Lambertus Postma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 31,236, Apr. 18, 1979. This application Feb. 2, 1981, Ser. No. 230,846

Claims priority, application Netherlands, Feb. 28, 1979, 7901578

Int. Cl.³ G11B *5/30*

U.S. Cl. 360—113 **3 Claims**



1. A magnetic head for detecting information-representing magnetic fields on a magnetic recording medium movable relatively with respect to the magnetic head, the head comprising an elongate magnetoresistive element which is current biased provided on two oppositely located ends with contacts for connection to a source of measuring current, said element having a magnetic anisotropy and having the easy direction of magnetization disposed in parallel relation to the longitudinal axis of the element, the magnetic head further comprising at least one electrically readily conductive strip which is provided obliquely on a surface of the element at a first angle of at least 30° and at most 60° with the longitudinal axis of said element, the magnetic head also including two components of magnetically permeable material of a nickel-iron alloy disposed in generally coplanar relation with a gap disposed therebetween, said magnetoresistive element spanning said gap, facing ends of the components of magnetically permeable material covering edge zones of the magnetoresistive element extending parallel to the longitudinal axis of said element, said readily conductive strip, said components of magnetically permeable material, and said gap with said magnetoresistive element forming a substantially closed path for magnetic flux, one end of the first one of said components of magnetically permeable material remote from the magnetoresistive element cooperating with the magnetic recording medium, the magnetic head further including a magnetic ferrite element which is positioned in substantially parallel spaced relationship to the two components of magnetically permeable material and which, at a first termination, is coupled magnetically to the second one of the components of magnetically permeable material and, at a second termination opposite said first termination, is disposed proximate to the magnetic recording medium movable relatively with respect to the head, said magnetic ferrite material being substantially thicker than said two components between which a gap is present and also substantially thicker than said magnetoresistive element, said one end of the first one of said components of magnetically permeable material being a magnetic medium scanning portion of said head, and the edge zones of the magnetoresistive element covered by the ends of the components of magnetically permeable material corresponding substantially with the areas of the element in which the direction of the current lines is not uniform when a measuring current flows through the element.

4,425,594

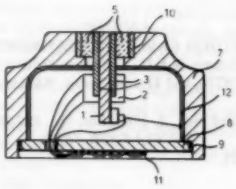
CERAMIC-FERRITE HEAD

Petko V. Kodjabashev; Georgi P. Malinovski, and Atanas T. Atanassov, all of Sofia, Bulgaria, assignors to Obedineni Zavodi Za Zapametyavashti Ustroystva, Stara Zagora, Bulgaria

Filed Sep. 28, 1981, Ser. No. 306,537

Int. Cl.³ G11B *5/10, 5/11, 5/12, 5/22*

U.S. Cl. 360—129 **1 Claim**



1. A ceramic-ferrite head for use with a flexible disk information storage medium which comprises:

a cylindrically magnetically soft ferrite body provided with an internal recess opening axially at one end of said body and formed at the opposite end of said body with an axial boss having a window opening into said recess;

a magnetic core assembly affixed to said body and comprising a recording-reading magnetic core having a portion positioned in said window and another portion extending into said recess, a recording-reading coil on said other portion of said recording-reading core, a pair of erasing magnetic cores, each having a portion disposed in said window and provided with a second coil and a pair of ceramic wafers, flanking the portions of said cores disposed in said window;

a glass-resin bonding agent bonding said assembly to said wafers in said window;

a conductive layer lining said recess;

a cap of magnetically soft ferrite closing said one end of said body and having a passage communicating with said recess;

a printed circuit board affixed to said cap externally of said recess and provided with a plurality of connecting terminals and a ground terminal;

respective leads extending through said recess from said coils to said connecting terminals; and

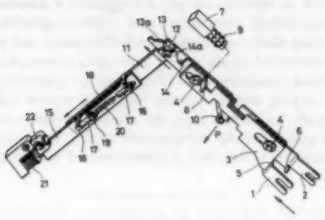
a ground lead connected to said cores and to said lining and extending to said ground terminal, said leads traversing said passage, said glass-resin, said body and said assembly all having substantially the same coefficient of linear extension.

4,425,595

LOCKING DEVICE OF A STARTING POSITION SEARCHING MECHANISM

Wataru Watanabe, and Shoji Kaneko, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,457
Claims priority, application Japan, Sep. 8, 1980, 55-126583[U]
Int. Cl.[3] G11B 15/18, 17/00, 19/02
U.S. Cl. 360—137 4 Claims



1. A locking device for a starting point searching mechanism in a magnetic tape machine, comprising:

an assembly of an elongated, fast-forward operational rod, an elongated, rewind operational rod and an elongated slide plate which are parallel with each other and disposed one on top of the other to form a stack, said fast-forward operational rod being mounted for longitudinal sliding movement between a non-actuated position and an actuated position in which it is effective for actuating driving of the tape at a fast speed, said rewind operational rod being mounted for longitudinal sliding movement independently of said fast-forward operational rod between a non-actuated position and an actuated position in which it is effective for actuating rewinding of the magnetic tape, said slidable plate being longitudinally slidable from a non-actuated position to an actuated position in response to movement of either of said fast-forward operational rod or said rewind operational rod to its respective actuated position, said fast-forward operational rod and said rewind operational rod each having a notch therein which notches are located adjacent to corresponding one ends of said rods;

a switch mounted for actuation in response to movement of said slide plate to said actuated position thereof;

an elongated, longitudinally slidable, off plate located adjacent to said corresponding one ends of said rods, said off plate having engaging means mounted thereon which engaging means is releasably receivable in one of said notches at a time for releasably locking one of said rods in its actuated position;

an elongated, longitudinally slidable, lock plate connected to said off plate for lengthwise sliding movement with respect thereto;

a spring connected between said off plate and said lock plate for resiliently urging said plates toward each other;

an electromagnetically operated plunger connected to be operated in response to actuation of said switch and coupled to said lock plate for urging said lock plate and thereby said off plate in a direction in which said engaging means on said off plate is releasably received in one of said notches whereby to releasably lock one of said rods in its actuated position;

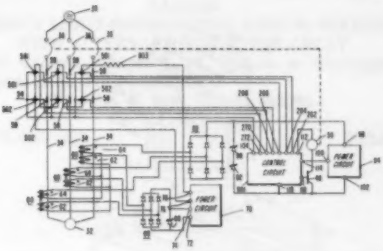
and release means operable in response to movement of the other rod to its actuated position for removing said engaging means from said one notch to release said one rod.

4,425,596

ELECTRIC CIRCUIT BREAKER

Kouzou Satou, Mie, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 11, 1981, Ser. No. 301,823
Claims priority, application Japan, Sep. 26, 1980, 55-134078; Apr. 28, 1981, 56-65023
Int. Cl.[3] H02H 3/08
U.S. Cl. 361—93 8 Claims



1. An electric circuit breaker for interrupting load current flowing from a power source through a line to a load, comprising:

a contact positioned in the line connecting the power source with the load;

Hall generator sensor means in proximity with the line for detecting the load current flowing through the line and providing an output voltage in response thereto, said sensor means comprising first and second Hall generators, said first Hall generator for detecting a first preset range of load current and said second Hall generator for detecting a second preset range of load current longer than the first range;

means for comparing the output voltage with a predetermined value and providing a signal for opening said contact when said output voltage differs from said predetermined value;

a current transformer connected to be responsive to the load current flowing in said line for applying power to said circuit breaker; and

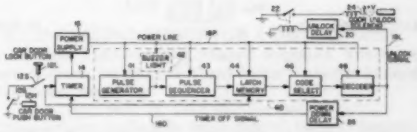
a power supply being receptive to said applied power to supply current to said sensor means and said comparing means.

4,425,597

ELECTRONIC LOCKING METHOD AND APPARATUS

Wayne E. Schramm, 8427 Frost Way, Annandale, Va. 22003

Filed Feb. 16, 1982, Ser. No. 348,754
Int. Cl.[3] E05B 49/00
U.S. Cl. 361—172 26 Claims



1. A method of unlocking a door, the steps comprising:

operating a door opening actuator in a predetermined coded sequence to enter a code, said entered code uniquely and completely determined by operation of said door opening actuator;

detecting said predetermined coded sequence;

generating an electrical unlock signal upon detection of said predetermined coded sequence; and

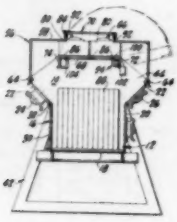
unlocking said door responsive to said electrical unlock signal.

4,425,598

ELECTRIC POWER DISTRIBUTION PANEL

Larry J. Pyle, 33 Scenic Dr., Napa, Calif. 94558

Filed Jun. 8, 1981, Ser. No. 271,510
Int. Cl.³ H02B 1/04
U.S. Cl. 361—361 **7 Claims**



1. A portable electric power distribution panel including a transformer comprising:

a. a container having an open portion between a bottom and opposing side wall portions, said container further including a plurality of receptacle openings; through said side wall portions, said container defined to at least enclose the transformer;

b. at least one member spanning said opposing side wall portions and being supported by said container;

c. a tray being placed adjacent to and being supported by said at least one member spanning said opposing wall portions; the transformer being positioned between said container bottom and said tray;

d. at least one bus bar located beneath said tray and adjacent said at least one member spanning said opposing side wall portions;

e. means for pivoting said tray and at least one bus bar in relation to said container including means for pivotally connecting said at least one member spanning said opposing wall portions to said container;

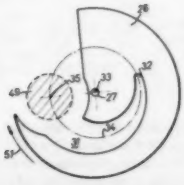
f. means for covering said open portion of said container, said covering means including an opening being positioned over said tray and door means for closing said covering means opening.

4,425,599

CAVITY ILLUMINATING DEVICE

Peter Rieder, Dietikon, and Robert Schürmann, Meilen, both of Switzerland, assignors to Volpi AG, Urdorf, Switzerland

Filed Jun. 3, 1982, Ser. No. 384,200
Claims priority, application Switzerland, Jun. 5, 1981, 3710/81
Int. Cl.³ F21V 7/04
U.S. Cl. 362—32 **14 Claims**



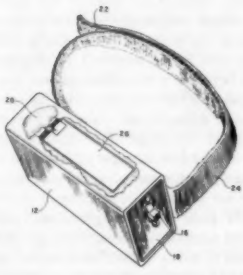
1. In a device for controlled illumination of a cavity comprising a light source; a fiber optic means for feeding light from said light source into said cavity, said fiber optic means having an entrance plane near said light source and an exit plane remote from said light source; and control means for controlling luminous density at said exit plane of said fiber optic means, said control means being arranged between said light source and said entrance plane of said fiber optic means; said control means comprising a disc-shaped diaphragm and a means connected with said diaphragm for controlled displacement thereof in a plane defined essentially by said disc shape, said plane being substantially vertical to a light beam from said light source to said entrance plane; said diaphragm being provided with an opening having a longitudinal dimension and a cross-longitudinal dimension, said cross-longitudinal dimension varying along said longitudinal dimension; and a direction of said controlled displacement coinciding essentially with said longitudinal dimension of said opening for providing an aperture of varying width between said light source and said entrance plane and controlling the change of illumination without changing the color temperature of said light source when said means for controlled displacement of said diaphragm is operated.

4,425,600

ELECTROLUMINESCENT WRIST LAMP FOR NIGHT VISION ENVIRONMENT

Richard L. Barnhart, 1025 Gable St., Springfield, Ohio 45505

Filed Sep. 10, 1981, Ser. No. 300,765
Int. Cl.³ F21V 9/16
U.S. Cl. 362—84 **3 Claims**



1. An electroluminescent wrist flashlight comprising a housing; a strap; a battery mounted within the housing to provide a D.C. power supply; an inverter means mounted within the housing for converting power from the battery into an A.C. signal; a flat electroluminescent phosphorus lamp mounted on one surface of the housing, wherein the lamp includes phosphors which are microencapsulated and hermetically sealed, the illumination from the lamp being of a wavelength that does not interfere with a person's night vision and does not degrade the performance of night vision goggles; said housing having two end panels which are interchangable and removable to provide easy access to the interior of the housing; a switch mounted on one of the end panels, whereby the switch may be placed on either end of the housing; electrical leads interconnecting the battery, the inverter, the switch and the lamp so that when the switch is actuated there are connections from the battery to the inverter and from the inverter to the lamp to energize the lamp to provide illumination; the housing having a long dimension which is a number of times greater than its other dimensions; the long dimension being along an axis orthogonal to the end panels; the housing being attached to said strap with said axis parallel to the length of the strap, the strap being of a material which adheres when pressed together to provide a touch and close fastener which is easily closed and opened repeatedly; wherein the lamp is mounted directly to the housing by means of an epoxy compound which serves as an adhesive cement and as a means of covering the current

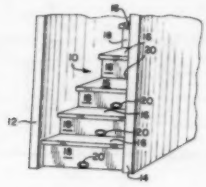
carrying leads of the lamp as well as protecting the edge of the lamp from moisture and humidity.

4,425,601

STAIRWAY LIGHTING SYSTEM

Robert Donahue, 36 Thorncreek Dr., Park Forest, Ill. 60466

Filed Aug. 31, 1981, Ser. No. 297,856
Int. Cl.³ F21S *1/02;* F21V *33/00;* E04F *11/00*
U.S. Cl. 362—146 8 Claims



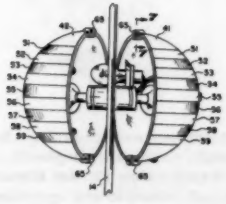
1. An apparatus powered by an A.C. line voltage source which comprises a plurality of stairs each of which includes a tread and a riser, said plurality of stairs being useable by one or more persons; transformer means adapted to reduce said A.C. line voltage from said source to provide a reduced A.C. voltage; a plurality of light means acting to illuminate said stairs when at least a portion of said reduced A.C. voltage is supplied to said plurality of light means and an electrical circuit including said plurality of light means is formed, each said light means being located in association with a different one of said risers; rectifier means associated with said transformer means acting to convert said reduced A.C. voltage to a D.C. voltage; a plurality of pressure sensitive switch means associated with said rectifier means so that at least a portion of said D.C. voltage is supplied to said plurality of pressure sensitive switch means, each of said switch means being located in association with a different one of said treads so that said pressure sensitive switch means is closeable in response to pressure from said person placed on said tread; with which said pressure sensitive switch means is associated; and relay means in association with said plurality of pressure sensitive means and said plurality of light means, and adapted to form said electrical circuit in response to at least one of said pressure sensitive switch means being closed.

4,425,602

UMBRELLA LAMP ASSEMBLY

Lawrence A. Lansing, 120 W. Sirius St., Anaheim, Calif. 92802

Filed Aug. 13, 1981, Ser. No. 292,346
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—186 12 Claims



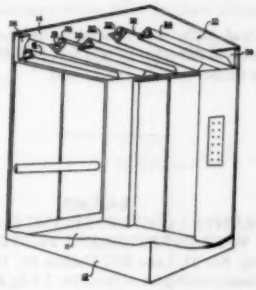
1. A portable lamp assembly having a self-contained power supply therein and being adapted for mounting to an umbrella stem, said assembly comprising a generally spherical hollow body including first and second light transmitting shells, means for coupling said shells together in a manner permitting opening and closing of said shells for placing said shells about an umbrella stem and then closing said shells about the umbrella stem, said shells having recesses at the top and bottom thereof for receiving and accommodating the umbrella stem, means associated with said recesses for frictionally engaging the stem, a lamp, means for mounting a battery in said hollow body, means for electrically coupling said lamp to a battery mounted completely within said hollow body, a switch mounted to said first shell, and means for electrically coupling said switch to said lamp and to a battery mounted in said hollow body.

4,425,603

INDIRECT LIGHT-DISTRIBUTING CEILING FIXTURES WITH ALTERNATE REFLECTOR ARRAY

Iber C. Courson, Gettysburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 14, 1981, Ser. No. 282,981
Int. Cl.³ F21V *23/02*
U.S. Cl. 362—222 9 Claims



1. An indirect light-distributing ceiling structure for illuminating a floor area below, comprising:

a light-reflective ceiling,

a plurality of elongated reflector members having longitudinal axes,

said reflector members having first, second and third major side portions having first, second and third major surfaces, respectively, which define a substantially triangular cross-sectional configuration,

said reflector members being disposed below said light-reflective ceiling, in horizontally spaced-parallel relation with one another, with one of the major surfaces of alternate reflector members being horizontally oriented and facing the light-reflective ceiling, and with one of the major surfaces of the intervening reflector members being horizontally oriented and facing the floor area below,

and a source of light mounted on the ceiling facing major surface of at least one of said alternate reflectors such that said source is not directly viewable from the floor area.

4,425,604

ILLUMINATING DEVICE FOR A DISPLAY UNIT

Hiroshi Imai, Yokosuka, and Fukashi Sugasawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 26, 1982, Ser. No. 444,695
Claims priority, application Japan, Feb. 15, 1982, 57-18448[U]
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—223 16 Claims

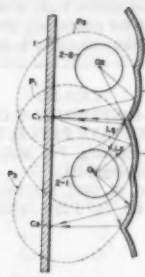
1. An illuminating device for a display unit which comprises:

(a) a display panel on which some letters or figures are displayed;

(b) at least one light source disposed at the back of said display panel for illuminating said display panel; and

(c) a reflector disposed at the back of said at least one light source, the inner surface of which is made up of at least

two unit cells, the contours of each of which are defined by the union of a pair of parts of elliptical surfaces arranged in such a way that one of two foci of each of the



elliptical surfaces is located at the center of said light source and the other of two foci thereof is located on the inner surface of said display unit.

4,425,605

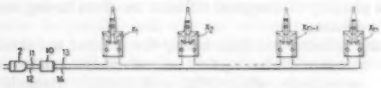
DECORATIVE LIGHTING STRING FOR ASSEMBLY WITH OVERCURRENT PROTECTION

Sam Cheng, No. 11, Lane 207, Hsimen St., Hsin-Chu, Taiwan

Continuation-in-part of Ser. No. 7,610, Jan. 29, 1979, abandoned. This application Aug. 14, 1980, Ser. No. 177,837

Int. Cl.³ F21M *1/00*

U.S. Cl. 362—227 **6 Claims**



1. A decorative lighting string with overcurrent protection comprising:

a plug adapted for connection of a source of current;

a pair of large diameter conductors connected to said plug;

a protection device connected to said pair of larger diameter conductors;

a pair of small diameter conductors connected to said protection device;

a plurality of sockets connected in one of parallel and series to said pair of small diameter conductors; and

a bulb connected in each of said sockets for receiving current through said pair of small diameter conductors;

said protection device comprising a housing defining a cavity having at least one opening on one side thereof for said large diameter conductors and at least one opening on an opposite side thereof for said small diameter conductors, a pair of spaced-apart posts extending into said cavity and adjacent each of said openings respectively, said large diameter conductors wrapped around one of said posts and said small diameter conductors wrapped about the other of said posts, a first contact connected in said cavity to each of said large diameter conductors and a second contact connected in said cavity to each of said small diameter conductors, a pair of fusible links connected in said cavity between each first contact and each second contact respectively.

4,425,606

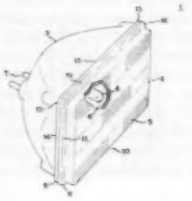
SEALED BEAM LAMP UNIT

Bruce E. Shanks, Chesterland, and Joseph P. Marella, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 5, 1982, Ser. No. 346,302

Int. Cl.³ F21V *29/00*

U.S. Cl. 362—267 **8 Claims**



1. A sealed beam lamp unit comprising a reflector and lens having pairs of cooperating and opposing innermost and outermost sealing surfaces located approximately about the lens and reflector peripheries; said pairs of sealing surfaces both being substantially step-shaped and spaced apart from each other and with said innermost steps being of greater elevation than said outermost steps for mating between substantially planar and parallel surfaces, with adhesive disposed thereon and therebetween, except for one or more portions along the innermost pair of opposing steps which are in contact with each other while said outermost pair of opposing steps remains spaced apart after being adhesively bonded together.

4,425,607

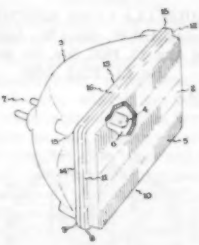
SEALED BEAM LAMP UNIT

Bruce E. Shanks, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 5, 1982, Ser. No. 346,303

Int. Cl.³ F21V *29/00*

U.S. Cl. 362—267 **9 Claims**



1. A sealed beam lamp unit comprising a lens and reflector having substantially rectangular peripheries, cooperating and opposing step-shaped sealing surfaces characterized by long and short sides and corners, located approximately about said peripheries, and spaced apart, so as to provide physical contact between said sealing surfaces limited to one or more portions along said long sides, and further including reservoirs located on either side of said sealing surfaces, with adhesive disposed thereon and therebetween except for said one or more portions which are in physical contact with each other, and said reservoirs containing excess adhesive which has oozed from between said sealing surfaces.

4,425,608

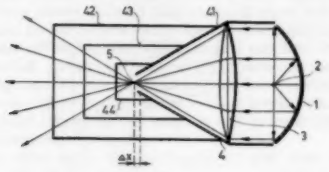
LUMINOUS DISPLAY INSTALLATION WITH AN INCREASED CONTRAST EFFECT

Gyula Hecker; Erno Kenez; Laszlo Nyari, and Janos Patta, all of Budapest, Hungary, assignors to Villamos Berendezes es Keszülek Müvek, Budapest, Hungary

Continuation of Ser. No. 157,070, Jun. 6, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,418

Int. Cl.³ F21V 7/00

U.S. Cl. 362—291 15 Claims



1. In an optical system for the light point of an illuminated signal or display device having at least one light point, the system comprising at least one light deflecting means optically coupled with the light source of the light point and focussing the light passing through an effective aperture of the said deflecting means towards a focal point or line, and at least one light shield disposed in the light path and having an aperture in the focal point or line, a plurality of the deflecting means with the corresponding light shields being disposable in rows and columns of a display board, the improvement wherein the light shield has a mantle framing a tapering hollow with its mouth facing the light deflecting means and narrowing towards the aperture of the light shield and wherein the mantle is disposed parallel to and encircling rays departing from the periphery of the effective aperture of the light deflecting means and converging into the focal point or line.

4,425,609

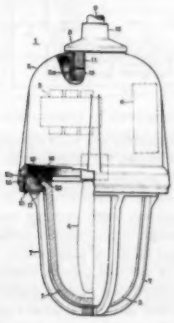
FIXTURE FOR HAZARDOUS AREA

James L. Grindle, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,486

Int. Cl.³ F29V 29/00

U.S. Cl. 362—373 10 Claims



1. A hazardous area electrical fixture required to withstand the pressure of an internal explosion and to provide venting to the outside without flame propagation comprising:

at least two metal parts forming wall-defining portions of said fixture, said parts being provided with screw threads interengaged to make a thread joint between said portions, said threads having clearance between them and defining a geometry assuring venting relief without flame propagation,

and a thin, hard, essentially pinhole-free paint coating on said threads, said coating being uniform in thickness with a variability not exceeding ±15% of the mean thickness and having an overall thickness small enough to have at most only a minor effect on the venting relief geometry of the thread joint.

4,425,610

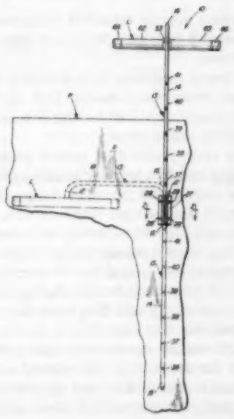
ADJUSTABLE HEIGHT LIGHTING FIXTURE WITH SWIVEL MOUNTED LAMP ASSEMBLY

Larry J. Krubsack, Colgate, and Thomas G. Volk, Germantown, both of Wis., assignors to Hartland Products Company, Inc., Hartland, Wis.

Filed Jun. 2, 1982, Ser. No. 384,407

Int. Cl.³ F21M 3/18

U.S. Cl. 362—419 21 Claims



1. A lighting fixture having a vertically adjustable and swivel mounted lamp assembly and adapted to be mounted on a vertical surface of or adjacent to a musical instrument or article of furniture or the like, said fixture comprising a mounting member adapted to be mounted on said vertical surface, said mounting member having vertically extending bearing means therein, a support member including an elongated vertically extending pivot portion mounted in said bearing means for axially shifted and rotatable movement, said pivot portion having a plurality of axially spaced recesses therein, detent means mounted in said mounting member and movable into an aligned one of said recesses for releasably retaining said support member in one of a plurality of vertically adjusted positions, said support member being rotatable about a vertical axis through said pivot portion while said detent means is engaged with one of said recesses, said support also including another vertically extending portion spaced from said pivot portion, swivel means carried by said other vertically extending portion of said support member, and a lamp assembly connected to said swivel means for rotation about a vertical axis through said other vertically extending portion, said swivel means including means for limiting rotation of said lamp assembly relative to said other vertically extending portion to a predetermined angular range.

4,425,611
SWITCHING VOLTAGE REGULATORS WITH OUTPUT VOLTAGES INDIRECTLY REGULATED RESPECTIVE TO DIRECTLY REGULATED BOOSTED INPUT VOLTAGES

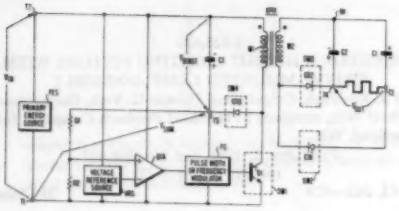
Finis C. Easter, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 6, 1982, Ser. No. 337,505

Claims priority, application United Kingdom, Oct. 16, 1981, 8131327

Int. Cl.³ H02P *13/18*

U.S. Cl. 363—21 **7 Claims**



1. A switching voltage regulator comprising:

first and second terminals for connecting to a primary energy source;

third and fourth terminals for connecting to a load;

a converter transformer having first and second primary winding connections and having first and second secondary winding connections;

electrically controllable first switch means for selectively connecting said first primary winding connection between said first and second terminals during first time intervals interspersed with second time intervals;

first and second capacitors having interconnected first plates and having second plates respectively connected to said third terminal and to said fourth terminal;

second switch means conductive during said first time intervals for connecting said first secondary winding connection across said first capacitor;

third switch means conductive during said second time intervals for connecting said second secondary winding connection across said second capacitor;

a third capacitor having a first plate connected to second terminal and having a second plate;

fourth switch means conductive during said second time intervals for connecting said second primary winding connection across said third capacitor; and

means responsive to the voltage between said first terminal and the second plate of said third capacitor departing from a prescribed value for developing electric control signal applied to said first switch means, thereby to complete a regulator loop for directly regulating the voltage between said first terminal and the second plate of said third capacitor and for indirectly regulating the voltage between said third and fourth terminals.

4,425,612
POWER SUPPLY WITH LOAD-TRANSIENT ANTICIPATION

David D. Bahler, McLean, Va., and Ricardo E. Calvo, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

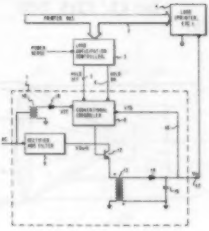
Filed May 12, 1982, Ser. No. 377,531

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—21 **11 Claims**

1. In a system utilizing a controllable power supply and a variable load device, said device presenting one of a plurality of predetermined loads across an output of said power supply in accordance with the reaction of said load device to particular data applied thereto, the improvement comprising:

means for sampling said data applied to said load device before said reaction of said load device to said data; and



means responsive to said sampled data for controlling said power supply to effect a future transfer of greater or lesser power to said load device at the time of said reaction to achieve the application of a relatively constant voltage across said load device throughout said reaction.

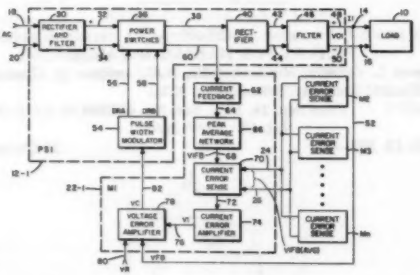
4,425,613
FORCED LOAD SHARING CIRCUIT FOR INVERTER POWER SUPPLY

Randolph D. W. Shelly, Rosemere, Canada, assignor to Sperry Corporation, New York, N.Y.

Filed May 26, 1981, Ser. No. 266,718

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—26 **11 Claims**



1. In a power supply for use with electronic equipment of the class having input means for coupling to a source of power; a plurality of power supply means coupled to said input means and each having output means coupled in common for providing current to common load; average output summing means for providing average output signals indicative of the average load current output of all of said power supply means to the load; a plurality of control circuit means each coupled to a respectively associated one of said plurality of power supply means for forcing said associated power supply to provide load current substantially equal to the load current provided by each of the other ones of said plurality of power supplies; wherein each of said plurality of power supply means includes power switch means capable of variable duty cycle operation for providing power signals to be utilized in determining said current to said common load pulse width modulation means coupled to said power switch means for adjusting said duty cycle in response to said control signals, thereby adjusting and controlling the level of said current supplied to said common

load; and wherein each of said control circuit means includes power supply output level sensing means for providing output level signals indicative of the output level of the associated one of said power supply means to the common load, comparison means for comparing said output level signals to said average output signals for providing control signals when said output level signals have a predetermined relationship to said average output signals, and power supply adjustment means responsive to said control signals for adjusting the output level of the associated one of said power supply means in response thereto, thereby substantially equalizing the load current provided by each of said power supply means; said power supply output level sensing means includes current transformer means coupled to said power switch means for providing feedback current signals indicative of the load current supplied from said power switch means and peak average network means for integrating said current feedback signals and providing said output level signals as comparison voltage levels indicative of said feedback current levels; wherein said comparison means further comprises

current error sense means coupled to said peak average network means and having average output receiving means for receiving said average output signals for providing error sense signals when said comparison voltage levels exceed said average output signals; and

current error amplifier means coupled to said current error sense means for providing current error indicating signals indicative of the level of comparison of said output level signals to said average output signals in response to said error sense signals.

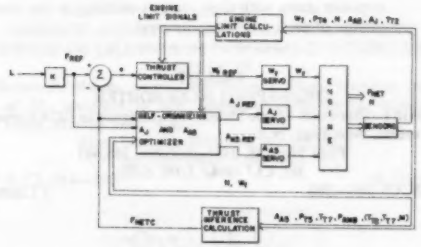
4,425,614
SELF-ORGANIZING CONTROL SYSTEM

Roger L. Barron, and Dixon Cleveland, both of Annandale, Va., assignors to Adaptronics, Inc., McLean, Va.

Continuation-in-part of Ser. No. 883,549, Dec. 9, 1969, abandoned. This application Jul. 20, 1973, Ser. No. 381,244

Int. Cl.[3] **G05B** *13/02;* **G06F** *15/50;* **G06G** *7/78*

U.S. Cl. 364—158 **36 Claims**



1. A system for on-line control of deviation between system commanded thrust and system calculated thrust of an engine having plural variable and measurable parameters, which comprises:

(1) command means for providing a commanded thrust signal,

(2) calculation means responsive to on-line measured engine parameters to calculate engine thrust,

(3) error means responsive to signals from said command and calculation means to provide an error signal indicative of the difference between the commanded and calculated thrust signals, and

(4) controller means responsive to said error signal which includes integration means for generating a signal representing an integral of said error signal, differentiation means for generating a signal representing a derivative of said error signal, scaling means for generating a signal proportional to said error signal, and summing means for summing said integral, derivative and proportional signals, where the output of said summing means provides control of a predetermined one of said engine parameters, further including integration limit means for limiting the output of said integration means.

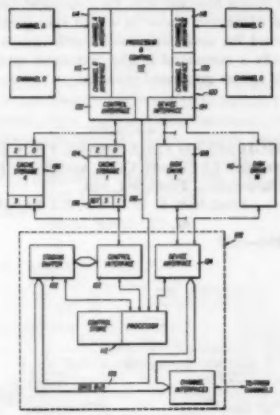
4,425,615
HIERARCHICAL MEMORY SYSTEM HAVING CACHE/DISK SUBSYSTEM WITH COMMAND QUEUES FOR PLURAL DISKS

Robert E. Swenson, Mendota Heights, Minn.; Lawrence D. Sassceer, Campbell, and Vladi Pusic, San Jose, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 207,104

Int. Cl.[3] **G06F** *13/00, 13/04, 15/16*

U.S. Cl. 364—200 **8 Claims**



1. A data processing system comprising:

a plurality of disk drive devices for driving disks, each of said disks storing segments of data,

a host processor for issuing host processor commands, each command defining an operation to be performed, and specifying a disk drive device number and the disk space at which said operation is to be performed;

a cache store for storing segments of data which have been read from, or are to be written to, said disks;

command queue storage means for storing a plurality of command queues, there being one command queue corresponding to each disk drive device with each command queue having a plurality of entries for storing disk commands and a corresponding command queue header including an indication of the number of commands in the corresponding command queue;

a storage control unit connected to said command queue storage means, said cache store, said host processor and said disk drive devices for controlling the transfer of data between said host processor, said cache store and said disk drive devices;

said storage control unit including,

first means responsive to a given host processor command for developing a queue command and storing it in the command queue corresponding to the disk drive device specified by said host processor command,

second means responsive to said given host processor command and the command queue header corresponding to the disk drive device specified by said given host processor command for selecting the disk drive device specified by the disk drive device number in said given command if the command queue header indicates that the command queue is empty prior to storage of said queue command therein, said each disk drive device

including means responsive to said second means for producing signals indicating that the selected disk drive device is busy or idle,

third means responsive to said signals for executing said queue command when said signals indicate that the selected disk drive device is idle,

fourth means responsive to said signals for determining if a copy of the data from the disk space specified by said given host processor command is resident in said cache store,

fifth means responsive to said fourth means for transferring data between said host processor and said cache store if said fourth means determines that a copy of the data from the disk space specified by said given host processor command is resident in said cache store, and,

sixth means responsive to the command queue header for the command queue in which said queue command is stored for activating said fourth means if there is already a command in the command queue into which said queue command is stored.

4,425,616

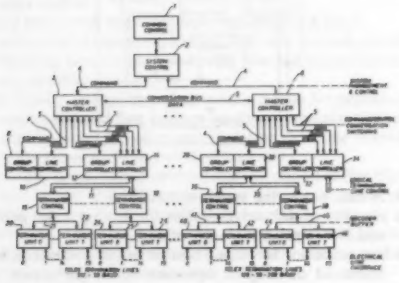
HIGH-SPEED TIME SHARE PROCESSOR

Jack L. Woodell, La Canada, Calif., assignor to Frederick Electronic Corporation, Frederick, Md.

Filed Nov. 6, 1979, Ser. No. 91,765

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **7 Claims**



1. A microcoded processor for use in a multi-channel high-speed data processing system in which each channel is processed in a time share mode by said processor according to selectable ones of a plurality of microcoded data-handling routines, each channel having input and output signals, the processor comprising:

(a) a sequence file, for storing addresses of the channels to be processed in which the stored addresses are outputted in response to a sequential sequence of storage location addresses, the outputted addresses controlling the order and rate at which each of the channels is time share processed according into which storage locations the address of each channel is stored in said sequence file, the processor processing each channel during time share intervals, and where the addresses in said sequence file may be changed during execution of the routines to provide for the dynamic control of the sampling of any given channel;

(b) a program memory for storing the microcode instructions for the plurality of data handling routines, which routines process the various input and output signals of the channels;

(c) a means of executing the microcode instructions stored in said program memory in which a predetermined number of microcode instructions are executed by said executing means for each channel during each time share interval;

(d) a routine re-entry file having an addressable memory location associated with each channel, each re-entry file memory location storing the program memory address of the next program instruction to be executed during the next time share interval for its associated channel, the next instruction address stored for each channel controlling which of the plurality of data handling routines is next to be executed for the channel, the stored re-entry addresses independent of the routine being executed for the associated channel during its last time share interval; and

(e) a channel data file having at least one block of memory locations associated with each channel, for storing and outputting to said executing means the data required by said executing means to process the next channel in a sequence, each associated block including memory locations for storing

(1) constant data reqired by the data handling routines to process each channel, and

(2) variable data required by the data handling routines to process each channel, where the function of each bit of each memory location for the variable data for each associated channel is variable and is redefined in accordance with which of the plurality of data handling routines is next to be executed for the associated channel; and

(f) said executing means including a constant and a variable high-speed cache memory for respectively storing the constant and variable data required by the routine currently being executed, said constant and variable cache memories each comprising first and second cache memories each having active and inactive states such that,

(1) when said first or second memory is in the active state, it contains the data for the current channel to be time share processed and is available for use by the microcode instructions, said active first or second variable cache memory adapted to permit the stored data to be modified during execution of the microcode instructions, and

(2) when said first or second memories are in the inactive state it is available for storing the data for the next channel to be time share processed in the next time share interval, said first and second memories always in opposite states with their states switching at the completion of each time share interval.

4,425,617

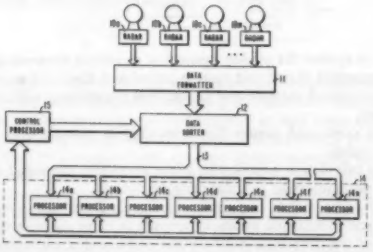
HIGH-SPEED DATA SORTER

David L. Sherwood, Maple Shade, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,647

Int. Cl.³ H04J *3/08, 6/00*

U.S. Cl. 364—200 **7 Claims**



1. An apparatus for generating routing information and for adding said information to a block of digitized data being sent from a source of such data to a utilization device for such data, said apparatus comprising:

first storage means responsive to said source of digitized data for storing a first segment of said data block;

a first addressable memory responsive to the data contained

in said first storage means for providing predetermined data signals;

means having input, output, and control terminals, responsive to said predetermined data signals of said first memory applied to its control terminals, for selecting data to be applied to its output terminals from among data of a second segment of said data block, being applied to its input terminals;

a second addressable memory, having output terminals, said second addressable memory coupled to said first storage means and said data selecting means for providing at its output terminals a data word accessed from said second memory in response to an address formed by the data stored in said first storage means and the selected data at the output terminals of said selecting means;

means coupled to said output terminals of said second memory and responsive to values of said data word accessed from said second memory for generating a plurality of control signals;

generator means coupled to said second memory and responsive to a first one of said plurality of control signals for transferring a data word stored in said generator means to said second memory for storage therein at said address formed by the data stored in said first storage means and the selected data at the output terminals of said selecting means;

means coupled to said second memory and to said first storage means and responsive to second one of said plurality of control signals for replacing the data stored in said first storage means by said data word accessed from said second memory for causing said data word to be accessed from said second addressable memory in a subsequent cycle of data transfer; and

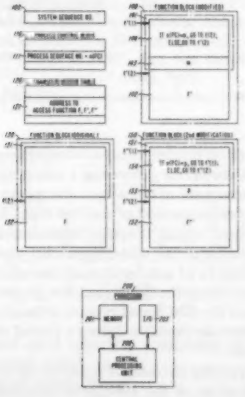
means responsive to a third one of said plurality of control signals for combining said data word accessed from said second memory with said block of digitized data for transmission of digitized data for transmission to said utilization device.

4,425,618

METHOD AND APPARATUS FOR INTRODUCING PROGRAM CHANGES IN PROGRAM-CONTROLLED SYSTEMS

Thomas P. Bishop, Aurora, and Susan J. Picus, Wheaton, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1981, Ser. No. 323,812
Int. Cl.³ G06F *7/00, 9/19*
U.S. Cl. 364—300 **14 Claims**



12. In a program-controlled processor system, wherein task processes are initiated and are executed by function calls to program functions stored in a program memory,

means for modifying a selected program function during the execution of task processes said means comprising:

first means for storing a current version of said selected program function;

second means for storing a modified version of said selected program function;

third means for storing data defining an activation time after which said modified version of said selected program function is to be used; and

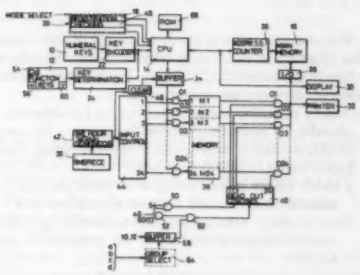
means for initiating execution of said current version if a process calling said program function was initiated before said activation time, and for initiating execution of said modified version if said process calling said selected program function was initiated after said activation time.

4,425,619

SELECTIVE READ OUT OF ONE HOUR TRANSACTION DATA IN AN ELECTRONIC CASH REGISTER

Kumehiko Matsuda, Joyo, and Hachizou Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 17, 1981, Ser. No. 274,532
Claims priority, application Japan, Jun. 23, 1980, 55-85772
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—405 **5 Claims**



1. An electronic cash register comprising:

means for introducing data into said register;

processor means responsive to the information from said means for introducing, for controlling the operation of said cash register;

program memory means for controlling operations in said processor means;

time information keeping means for generating current time information;

one hour signal generation means connected to said time information keeping means for developing a memory control signal every hour;

buffer memory means for accumulating transaction data developed by said processor means;

accumulated transaction memory means including a plurality of memory sections, each for storing accumulated transaction data entered into said register by said means for introducing between two adjacent memory control signals;

control means responsive to each said memory control signal for transferring the transaction data accumulated by said buffer memory means into a memory section of said accumulated transaction memory means associated with said received control signal, said control means further clearing said buffer memory means after the transfer;

means for printing accumulated transaction data stored in the memory sections of said accumulated transaction memory means; and

a print control system including,

means for selecting at least one of said memory sections in said memory means, and

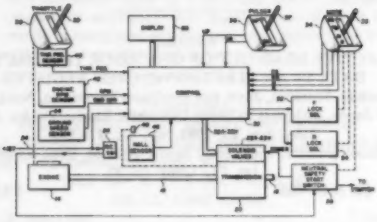
transfer means responsive to said means for selecting, for supplying the total amount stored in said at least one selected memory sections to said means for printing.

4,425,620

ELECTRICAL CONTROL FOR POWER SHIFT TRANSMISSION

Barry D. Batcheller, West Fargo, and William E. Martinson, Fargo, both of N. Dak., assignors to Steiger Tractor, Inc., Fargo, N. Dak.

Filed Jan. 28, 1981, Ser. No. 229,132
Int. Cl.³ B06K *41/08*; G06F *15/20*
U.S. Cl. 364—424.1 **34 Claims**



1. For use in a vehicle having an engine and a transmission with a plurality of gear ratios which are individually selectable as a function of electrical transmission control signals, a transmission control system comprising:

manually operable mode select means for selecting one of a plurality of operating modes including a forward manual mode, a neutral mode, and a reverse mode, wherein the mode select means comprises:

a mode select lever having a forward manual position, a neutral position, and a reverse position; and

lever position sensing means for providing signals to the control means indicative of the position of mode select lever;

manually operable upshift/downshift means separate from the mode select means for providing upshift and downshift electrical signals, the upshift electrical signal representing a requested increase in gear ratio and the downshift electrical signal representing a requested decrease in gear ratio, wherein the manually operable upshift/downshift means comprises:

an upshift/downshift lever having a normal position, an upshift position, and a downshift position;

means for providing the upshift signal in response to the upshift/downshift lever being in the upshift position; and

means for providing the downshift signal in response to the upshift/downshift lever being in the downshift position; and

control means for providing the electrical transmission control signals to select one of the plurality of gear ratios as a function of the operating mode selected and the upshift and downshift signals.

27. For use in a vehicle having an engine and a transmission with a plurality of gear ratios which are individually selectable as a function of electrical transmission control signals, a transmission control system comprising:

ground speed sensing means for providing an electrical ground speed signal indicative of speed of the vehicle;

engine speed sensing means for providing an electrical engine speed signal indicative of the speed of the engine;

manually operable clutch actuator means mechanically linked to the transmission and movable by an operator for disengaging the engine from the transmission when actuated by movement from a normal unactuated position;

clutch position sensing means for sensing position of the manually operable clutch actuator means and providing a clutch position signal which indicates when the clutch actuator means is moved from its normal unactuated position; and

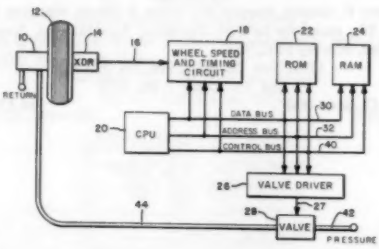
control means for providing transmission control signals to select one of the plurality of gear ratios, the control means receiving the clutch position signal, the engine speed signal, and the ground speed signal and providing transmission control signals which cause the transmission to select a gear ratio when the manually operable clutch actuator means moves from an actuated position to its normal unactuated position which is a function of the ground speed signal and the engine speed signal; wherein the control means permits movement of the manually operable clutch actuator means to modulate mechanically the output of the transmission when the transmission is providing a predetermined gear ratio, and provides transmission control signals which cause the transmission to select the neutral mode when the transmission is providing a gear ratio other than the selected gear ratio and the manually operable clutch actuator means is moved to an actuated position.

4,425,621

SPIN-UP DETECTION APPARATUS FOR BRAKE CONTROL SYSTEM

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed Aug. 8, 1980, Ser. No. 176,348
Int. Cl.³ G06F *16/20*
U.S. Cl. 364—426 **13 Claims**



1. In an automatic braking brake control system for a vehicle having a wheel, means for generating a wheel signal indicative of rotational movement of the wheel, and means for automatically initiating braking action of a wheel brake following generation of a control signal, the improvement comprising:

means, responsive to the wheel signal, for generating a first signal indicative of acceleration of the wheel;

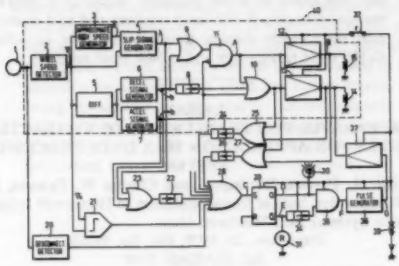
means, responsive to the first signal, for generating a control signal when the first signal crosses a threshold indicative of low wheel acceleration during a period of initial wheel spin-up; and

means for supplying the control signal to the initiating means as an indication of the substantial completion of initial wheel spin-up in order to cause the initiating means to initiate braking action.

4,425,622
SKID CONTROL SYSTEM

Tetsuro Arikawa, Yokosuka, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Jan. 23, 1981, Ser. No. 227,604
Claims priority, application Japan, Jan. 24, 1980, 55-7171
Int. Cl.³ B60T 8/08
U.S. Cl. 364—426 15 Claims



1. A skid control system for a vehicle having a wheel and a brake for the wheel comprising:

(a) a wheel speed sensor for providing an output signal representative of the speed of said wheel;

(b) skid control circuit means responsive to the output signal of said wheel speed sensor for relieving and reapplying the brake for said wheel;

(c) failure detecting means for detecing failure of said skid control circuit means;

(d) power source means connected to said skid control circuit means;

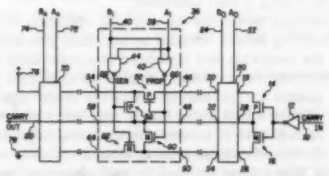
(e) means for controlling the brake pressure for said wheel; and

(f) a safety device operatively connected to the brake pressure control means responsive to a detecting signal of said failure detecting means for disconnecting said skid control circuit means from said power source means and gradually increasing the brake pressure for said wheel by activating and deactivating the brake pressure control means alternately for a predetermined time, said safety device includes timer means actuated with said failure detecting signal brake pressure to drive said control means.

4,425,623
LOOKAHEAD CARRY CIRCUIT APPARATUS

Jeffrey D. Russell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 14, 1981, Ser. No. 283,304
Int. Cl.³ G06F 7/50
U.S. Cl. 364—786 7 Claims



1. Lookahead carry apparatus comprising, in combination:

propagate signal supply means;

generate signal supply means;

signal power circuit supply means including first and second terminals;

ground circuit terminal means including first and second terminals;

carry signal terminal means;

first gating means including control means connected between first and second terminals of said power supply means for connecting said first and second terminals to allow passage of signals in response to signals of a given logic value supplied to said control means thereof;

second gating means including control means connected between said carry signal means and said first terminal means of said ground means for electrically connecting said carry signal terminal means and said first terminal means of said ground circuit terminal means in response to control signals of a value opposite said given logic value;

means connecting said propagate signal supply means to said control means of each of said first and second gating means;

third gating means including control means connected between said first terminal of said signal power circuit supply means and said carry terminal means for electrically connecting said first terminal means of said signal power circuit supply means and said carry signal terminal means in response to control signals received of said given logic value;

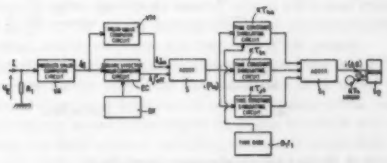
fourth gating means, including control means, connected between first and second terminal means of said ground circuit terminal means for electrically connecting said first and second terminals of said ground circuit terminal means together in response to control signals of a logic value opposite said further given logic value; and

means connecting said generate signal supply means to said control means of each of said third and fourth gating means for supplying control signals thereto.

4,425,624
DEVICE FOR SIMULATING AN INSTANTANEOUS TEMPERATURE-RISE OF A SEMICONDUCTOR COMPONENT IN ORDER TO PROTECT SAME

Jean P. Planche, Les Clayes sous Bois, France, assignor to La Telemecanique Electrique, France

Filed Jun. 10, 1981, Ser. No. 272,224
Claims priority, application France, Jun. 11, 1980, 80 13360
Int. Cl.³ G06G 7/62
U.S. Cl. 364—802 3 Claims



1. A device for simulating an instantaneous temperature-rise of a semi-conductor power component in a predetermined environment in order to protect same, said component having a semi-conductor junction, a housing and a radiator, said device comprising in combination:

(a) first means (TI, R1), for simulating the instantaneous intensity I of the current flowing through said component;

(b) second and third means (VM and EC) connected to the first means for respectively simulating the mean value of the said current intensity and the square I^2_{eff} of the effective current;

(c) fourth means (S) connected to the second and third means for summing up said mean current intensity Im and said square I^2_{eff} of the effective current, with respective weighting coefficients representing predetermined maximum values, in order to simulate the mean power dissipated by said component;

(d) fifth, sixth and seventh means ($K\tau_{jb}$, $K\tau_{br}$ and $K\tau_{ra}$ re-

spectively) connected to said fourth means for simulating the respective time constants of the thermal resistances (R_{jb}, R_{hr} and R_{ra}) between the junction and the housing bottom, between the housing and the radiator and between the radiator and the environment; said fifth, sixth and seventh means respectively providing image signals of the said time constants; and

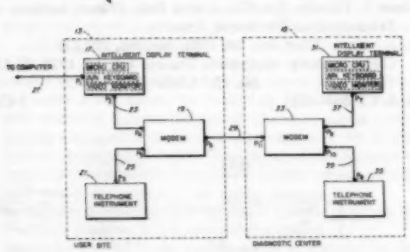
(e) eighth means (S_1) connected to the fifth, sixth and seventh means, for summing up the said image signals of the respective time constants, with weighting coefficients corresponding to predetermined values of said thermal resistances, said eighth means having an output, whereby an image signal of the temperature-rise undergone by said component is obtained at the output of the said eighth means, wherein said seventh means ($K\tau_{ra}$) for simulating the time-constant of the thermal resistance between the radiator and the environment comprise a capacitor (C7), first circuit means, connected to the said fourth means, for charging said capacitor and second circuit means for discharging said capacitor, said first circuit means comprising a first resistor (R_{22}) and a first chopper-switch (CA_1), mounted in series with said resistor, and means (B_1T_1) for generating periodic pulses adapted to control said first chopper-switch and said second circuit means comprising a second resistor (R_{23}) and a second chopper-switch (CA_2) connected in series with said second resistor.

4,425,625

DIAGNOSTIC DISPLAY TERMINAL SYSTEM

Lawrence Seligman, Sherborn, and Ralph A. Perron, Northbridge, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Jun. 12, 1979, Ser. No. 47,751
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **1 Claim**



1. A display terminal system comprising:

(a) a user-site display terminal assembly, said user-site display terminal assembly including:

(i) a microprocessor controlled display terminal, said display terminal having an alpha-numeric keyboard, a micro CPU, a video monitor, a first port for connecting said display terminal to a computer and a second port,

(ii) a telephone instrument, and

(iii) a modem coupled to said second port of said display terminal and said telephone instrument for interfacing said display terminal and said telephone instrument to a telephone line, and

(b) a support-site display terminal assembly, said support-site display terminal assembly including:

(i) a microprocessor controlled display terminal having an alpha-numeric keyboard, a port, a micro CPU, and a video monitor,

(ii) a telephone instrument, and

(iii) a modem coupled to said display terminal through said port and said telephone instrument for interfacing said microprocessor controlled display terminal and said telephone instrument to said same telephone line,

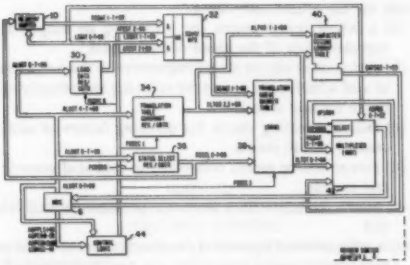
(c) said modems being split baud rate modems and being constructed so as to enable switching between voice and data modes of operation and such that inputs entered by either display terminal appear on both display terminals when a telephone link is established between said terminal assemblies over said telephone line, said modem in said user-site dislay terminal assembly including a 2400 baud transmitter and a 0–150 baud receiver and said modem in said support-site display terminal assembly including a 0–150 baud transmitter and a 2400 baud receiver.

4,425,626

APPARATUS FOR TRANSLATION OF CHARACTER CODES FOR APPLICATION TO A DATA PROCESSING SYSTEM

Arthur A. Parmet, Burlington, and Charles W. Dawson, East Bridgewater, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 29, 1979, Ser. No. 98,456
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **4 Claims**



1. A document processing system comprising:

a reader/sorter having at least one of a plurality of read heads for reading magnetic ink character recognition characters, optical mark recognition characters, or optical character recognition characters, or combinations thereof for reading their respective fields of documents and including means for generating character code signals during a store operation;

and adapter coupled to said reader/sorter during said store operation and having storing means responsive to said character code signals for generating corresponding translated character code signals during said store operation;

a data processing system coupled to said adapter and having means for receiving said translated character code signals for processing information from said documents during said store operation, said data processing system having means for generating said translated character code signals during a load operation;

said storing means during said load operation including:

receiving means coupled to said data processing system for receiving said translated character code signals;

character count means coupled to said data processing system for generating character count signals for receiving a first initial count, and being incremented for each of said translated character code signals receiving from said data processing system;

selection means coupled to said character count means and responsive to said character count signals for generating address location signals;

quadrant count means coupled to said data processing system and said character counting means for receiving a second initial count for generating quadrant count signals, and being incremented when said character

counting means stores a predetermined value, said quadrant count signal being indicative of said one of said plurality of read heads; and,

memory means coupled to said receiving means, said selection means, and said quadrant count means for storing said translated character code signals at an address location specified by said address location signals and said quadrant count signals,

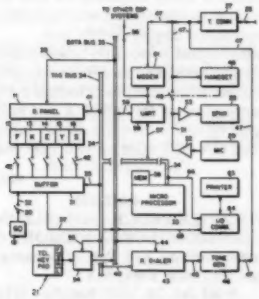
wherein said selection means is further responsive to said character code signals from said reader/sorter for generating said address location signals during said store operation; p2 said memory means being coupled to said selection means and said quadrant count means, and being responsive to said address location signals and said quadrant count signals, for generating said translated character code signals for transfer to said data processing system during said store operation.

4,425,627

INTELLIGENT PROMPTING TERMINAL APPARATUS

Jules A. Elbner, Blue Bell, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,043
Int. Cl.³ G06F *1/00*; G08C *9/00*
U.S. Cl. 364—900 **10 Claims**



1. An intelligent prompting terminal comprising:

terminal housing means,

elongated visual line display means mounted on said terminal housing means,

data processing means disposed in said terminal housing means coupled to said visual display means,

memory means disposed in said terminal housing means coupled to said visual display means via said data processing means for presenting sets of functions for display on said visual display means,

a plurality of blank function keys mounted on said terminal housing means in close proximity to said visual line display means,

each said function key being dedicated to a predetermined portion of said visual display means,

each said function key being aligned with its associated and dedicated portion of said visual display means,

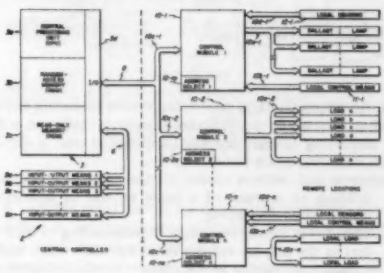
each said function key being coupled to said data processing means for transmitting signals thereto upon depression of a said function key, whereby said data processing means will respond with a function indicative of the function being displayed on said visual display means opposite said depressed function key and will present a new set of functions on said visual display means opposite said function keys.

4,425,628

CONTROL MODULE FOR ENGERGY MANAGEMENT SYSTEM

James F. Bedard; Scott E. Cutler; Charles W. Eichelberger, all of Schenectady, N.Y.; Edward B. Miller, West Warwick, R.I., and Salvatore F. Nati, Jr., Syracuse, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 26, 1981, Ser. No. 267,328
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **92 Claims**



1. Apparatus for providing a variable-characteristic signal for controlling the condition of at least one associated load to a selected one of plural levels of operation, said apparatus comprising:

(a) at least one local control means for providing load control means data signals and including at least one switching element having open and closed contact positions;

(b) controller logic means including a central processor unit (CPU), ROM means for substantially permanently storing program data defining operational parameters of the apparatus and for providing said program data under control of said CPU, RAM means for substantially temporarily storing digital data under control of said CPU, and input-/output (I/O) means having ports for communicating digital data to and from the controller logic means;

(c) interface means responsive to a command from said CPU for interfacing said local control means data signal in digital form to at least one of said I/O means ports; said interfacing means including an input bus to which said at least one local control switching element is connected;

(d) said CPU periodically requesting said local control means data signals from said I/O means in accordance with instructions contained in said ROM means program data;

(e) said RAM means receiving and storing the local control means data from said interfacing means until such data is requested by said CPU;

(f) said CPU producing digital data at least in part dependent upon the content of said local control means data signals;

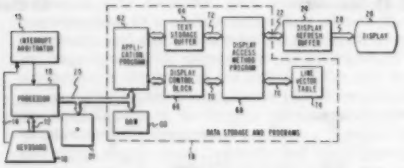
(g) said RAM means receiving and storing said digital data; and

(h) means responsive to said digital data signals stored in said RAM means for producing said variable-characteristic signal with the magnitude of the variable characteristic being established responsive to said digital data obtained from said RAM means and for providing said variable-characteristic signal for controlling the condition of at least one associated load to a selected one of a plurality of at least three levels of operation.

4,425,629
DISPLAY SUPPORT OF INDEFINITE PAGE

William C. Casoa, Austin, and Ward A. Kuecker, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,048
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 11 Claims



1. An interactive text processing system including connected random access and direct access storage, a keyboard, a display for displaying at least one line of cursored text, a display refresh memory, and a processor,

wherein said random access storage includes a first area for holding an amount of a body of text of indeterminate length to be displayed;

a second area having one entry corresponding to each line of text in the display refresh memory, each entry including format information and a pointer to the location in said first area holding the text to be displayed;

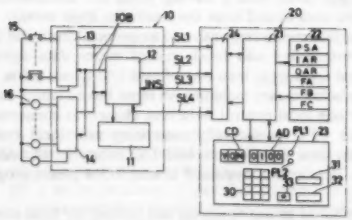
said system further including means for circulating data between said first area in the random access storage and said direct access storage so that the absolute location of text in said first area changes; and

means for expressing each entry in said second area relative to a known address in said first area.

4,425,630
SEQUENCE INSTRUCTION DISPLAY SYSTEM

Toshihiko Yomogida, Kariya; Tsuyoshi Yokota, Okazaki, and Haruhisa Tsuji, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi, Japan

Filed Sep. 16, 1981, Ser. No. 302,765
Claims priority, application Japan, Sep. 29, 1980, 55/135646
Int. Cl.³ G06F *15/00*
U.S. Cl. 364—900 6 Claims



1. A sequence instruction display system for use with a sequence controller having a program memory for storing a sequence program composed of a plurality of test and output instructions, said display system comprising:

program storage means;

address designation means manually operable for selectively designating the addresses of input and output elements connected to said sequence controller;

control command means manually operable for selectively generating first, second, third and fourth commands;

instruction display means for displaying said test and output instructions one at a time;

state display means for displaying the ON-OFF state of any one of said input and output elements which is the objective of a test or output instruction being displayed on said instruction display means;

a data processor coupled to said sequence controller, said program storage means, said address designation means, said control command means, said instruction display means and said state display means, including:

first control means responsive to said first command from said control command means for applying an interrupt to said sequence controller so as to transfer said sequence program from said program memory of said sequence controller to said program storage means;

second control means responsive to address data from said address designation means and said second command from said control command means for searching said program storage means for an output instruction having said address data designated by said address designation means so as to display said searched output instruction on said instruction display means;

third control means for searching said program storage means for a number of test instructions which relate to the energization of an output element having said designated address so as to display successively said searched test instructions on said instruction display means when repeatedly given said third command from said control command means;

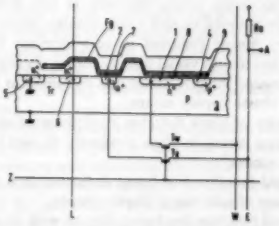
fourth control means responsive to said fourth command from said control command means for searching said program storage means for an output intruction programmed for operating an output element for which a test instruction is being displayed on said intruction display means, so as to display said searched output instruction on said instruction display means; and

fifth control means responsive to said third command from said control command means for applying an interrupt to said sequence controller so as to read the ON-OFF state of any input element for which a test instruction is being displayed on said instruction display means and to display said read ON-OFF state on said state display means.

4,425,631
NON-VOLATILE PROGRAMMABLE INTEGRATED SEMICONDUCTOR MEMORY CELL

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 29, 1981, Ser. No. 287,835
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 3029539
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 8 Claims



1. A non-volatile programmable integrated semi-conductor cell comprising

a semiconductive substrate of one conductivity type having an active surface;

a reading insulated-gate field effect transistor (IGFET) including a part incorporated in said substrate and having an insulated gate at said active surface, and a floating gate electrode having a main portion juxtaposed with said

insulated gate and extensions contiguous with said main portion and disposed along said active surface beyond the boundaries of said insulated gate;

a pair of programming electrodes constituted by planar regions of the other conductivity type in said substrate, including a writing electrode and an erasing electrode each having an insulated gate of a thickness permitting junction crossing by hot carriers in partial overlap with said extensions of said floating gate electrode for capacitative coupling thereto, the region of overlap at said writing electrode being larger than that at said erasing electrode; and

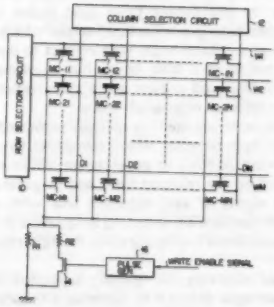
a diffusion region of said one conductivity type in said substrate next to and at a small distance from said writing electrode and having a surface area smaller than that of said writing electrode, the respective extension of said floating gate being juxtaposed with at least a portion of said surface area of said diffusion region, so that the recharging of said floating gate electrode is effected by minority carrier injection which takes place during the writing operation through said surface area portion of said diffusion region in the form of a current of hot minority carriers originating in said substrate, and during the erasing operation through the insulated gate of said erasing electrode.

4,425,632

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Hiroshi Iwahashi, Yokohama, and Masamichi Asano, Musashino, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1980, Ser. No. 180,991
Claims priority, application Japan, Aug. 29, 1979, 54-110057
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—189 **39 Claims**



1. A nonvolatile semiconductor memory device comprising:

at least one memory cell consisting of an MOS transistor with a floating gate;

at least one word line coupled to the gate of the MOS transistor of said at least one memory cell to selectively transmit an access signal to said at least one memory cell;

at least one data line coupled to the drain of the MOS transistor of said at least one memory cell to transmit data to be transferred to and from said memory cell; and

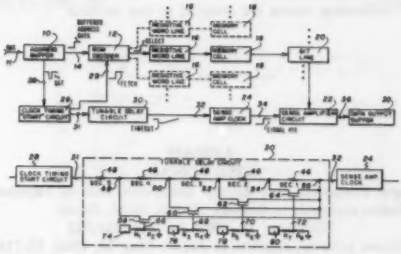
potential level control means, coupled to the source of the MOS transistor of said at least one memory cell, for maintaining the source potential of said MOS transistor substantially at a given level higher than the substrate potential of said MOS transistor.

4,425,633

VARIABLE DELAY CIRCUIT FOR EMULATING WORD LINE DELAY

William J. Swain, McKinney, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Oct. 6, 1980, Ser. No. 194,334
Int. Cl.³ G11C *7/00*; H03H *7/30*
U.S. Cl. 365—194 **16 Claims**



1. A variable delay circuit for optimizing emulation of word line delays in semiconductor memories having a distributed resistive delay line comprised of:

a plurality of nodes interspersed along the length of said distributed resistive delay line and defining a plurality of individual sections of the delay line, and wherein the resistance from each node to a common node at the end of the delay line is a fraction of the total resistance of the entire line;

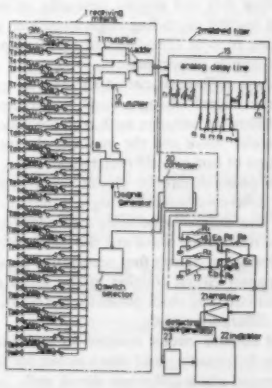
a plurality of switching devices with each switching device connected between one of said nodes and common node for bypassing a preselected section or group of sections of the distributed resistive delay time.

4,425,634

DETECTION SYSTEM

Hiroshi Iino, and Toyoki Sasakura, both of Nishinomiya, Japan, assignors to Furuno Electric Co., Ltd., Nishinomiya, Japan

Filed Aug. 3, 1981, Ser. No. 289,682
Claims priority, application Japan, Aug. 26, 1980, 55-118004
Int. Cl.³ G01S *3/80, 3/52*
U.S. Cl. 367—120 **14 Claims**



1. A detection system for receiving incoming signals from a plurality of directions and presenting a display resulting from the received incoming signals on an indicating means, comprising:

a. receiving means for receiving incoming signals and varying the frequency of the incoming signals to produce a Doppler effect,

b. a matched filter connected to pulse-compress output signals from said receiving means,

c. indicating means connected to display output signals from said matched filter, and

d. control means connected to control said receiving means and indicating means, whereby said receiving means and indicating means are coupled to one another.

4,425,635

FISH SONAR

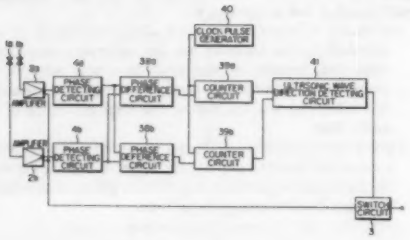
Shigeo Yamamoto, and Kazuto Kobayashi, both of Toyohashi, Japan, assignors to Keisuke Honda, Aichi, Japan

Filed Dec. 16, 1980, Ser. No. 216,922

Claims priority, application Japan, May 30, 1980, 55-71478; May 30, 1980, 55-71479

Int. Cl.³ G01S *3/80, 15/96*

U.S. Cl. 367—125 **2 Claims**



1. Sonar receiving apparatus, comprising:

first and second adjacent sonar transducers for converting sonic waves to corresponding first and second received electrical signals;

first and second wave shaping means responsive to corresponding ones of said first and second received signals for providing first and second generally rectangular waves having leading or trailing edge transitions at times corresponding to zero crossovers of said first and second received signals respectively;

a first phase difference circuit for providing a first phase difference signal having a duration corresponding to the time difference between each edge transition of said first rectangular wave and the immediately succeeding edge transition of said second rectangular wave;

a second phase difference circuit for providing a second phase difference signal having a duration corresponding to the time difference between each edge transition of said second rectangular wave and the immediately succeeding edge transition of said first rectangular wave;

a first counter circuit coupled to said phase difference circuits for counting clock pulses for the duration of said first phase difference signal;

a second counter circuit coupled to said phase difference circuits for counting said clock pulses for the duration of said second phase difference signal; and

a sonic wave direction detecting circuit coupled to the outputs of said counters for providing a sonic wave direction indicating signal having a value indicative of the one of said counters having the lower output and of the magnitude of said lower output.

4,425,636

METHOD AND APPARATUS FOR REPRODUCING OPTICALLY AN INFORMATION RECORDED ON A RECORD MEDIUM ALONG TRACKS

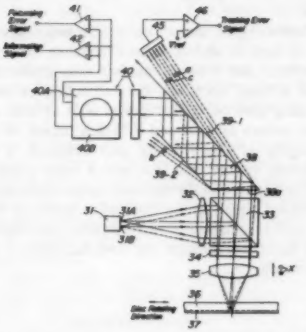
Tohru Musha; Kiichi Kato, and Kenichi Ito, all of Hachioji, Japan, assignors to Olympus Optical Co. Ltd., Japan

Filed Sep. 10, 1981, Ser. No. 301,092

Claims priority, application Japan, Sep. 12, 1980, 55-126964

Int. Cl.³ G11B *7/00, 21/02*

U.S. Cl. 369—44 **39 Claims**



1. A method for reproducing optically an information recorded on a record medium along tracks comprising:

a step of generating at least two light beams;

a step of projecting said light beams onto said record medium by means of an objective lens in such a manner that one of the light beams is positioned on a track to be reproduced and the other beam is situated on the relevant track to be reproduced or another track near the relevant track;

a step of converting each of the light beams reflected by the record medium and collected by said objective lens into a parallel light flux;

a step of separating spatially said light beams from each other by introducing these light beams into an optical member having a reflection surface which is set substantially at a critical angle with respect to one of the beams referred to as a main beam, but at an angle smaller or larger than said critical angle with respect to the other beam referred to as a sub beam;

a step of receiving the thus spatially separated main beam by a first light detector which comprises two bisected light receiving regions to generate an information signal recorded on the relevant track and to generate a focussing error signal of said objective lens with respect to the record medium by detecting a variation in distribution of the main beam impinging upon the light receiving regions; and

a step of receiving the spatially separated sub beam by a second light detector to generate a tracking error signal representing a positional deviation of the relevant track and the main beam by detecting a variation in a light amount of the sub beam impinging upon the second light detector.

4,425,637

OPTICAL RECORDING APPARATUS

Shinichi Tanaka, Kyoto, and Tadashi Abe, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1981, Ser. No. 316,908

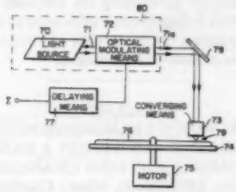
Claims priority, application Japan, Oct. 31, 1980, 55-152115

Int. Cl.³ G11B *7/00*; H04N *5/781*

U.S. Cl. 369—124 **11 Claims**

1. An optical recording apparatus for recording a digital

signal on a recording medium, comprising: an input terminal to which a digital signal pulse is inputted; a delaying means which is operatively coupled to said input terminal for delaying an edge of said digital signal pulse so as to produce an edge-delayed pulse; a light beam generating means which is operatively coupled to said delaying means for generating a amplitude-modulated light beam under the actuation of said edge-



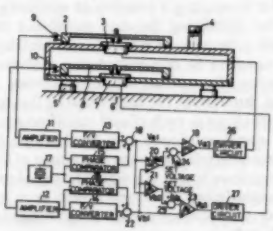
delayed pulse; a converging means which is operatively coupled to said light beam generating means for converging said amplitude-modulated light beam so as to form a writing light spot on said recording medium; and a moving means which is operatively coupled to said recording medium for moving said recording medium at a constant velocity relative to said writing light spot, whereby a length of a written part on said recording medium is controlled by said delaying means.

4,425,638

DUAL TURNTABLE RECORD PLAYER WITH TORQUE CANCELLATION

Masao Suzuki, and Yasuhiro Fujimoto, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,475
Claims priority, application Japan, Aug. 28, 1980, 55-118762
Int. Cl.³ G11B 25/04
U.S. Cl. 369—265 **11 Claims**



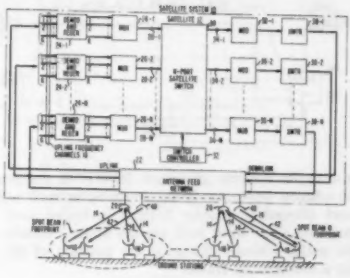
6. A record player, comprising: a first motor (3) mounted in a cabinet (1) on which a tone arm (4) including a pickup is mounted, a first turntable (2) coupled to an output shaft of and rotatably driven by said first motor, a second motor (7) mounted in the cabinet coaxially with said first motor, a second turntable (8) coupled to an output shaft of and rotatably driven by said second motor, speed detection means to detect a rotating speed of said first or second turntable, phase comparison means to compare a phase of an output from said speed detection means with a reference phase, voltage conversion means to convert the speed detection output into a voltage, adding means to add an output from said phase comparison means and an output from said voltage conversion means, and amplification means capable of controlling its gain for an output from said adding means with an externally set voltage, an output from said amplification means being applied to said first and second motors to rotatably drive said respective first and second turntables in opposite directions such that torque vibrations developed by said motors are substantially equal in amplitude but opposite in phase, and thereby cancel each other.

4,425,639

SATELLITE COMMUNICATIONS SYSTEM WITH FREQUENCY CHANNELIZED BEAMS

Anthony Acampora, Freehold; Douglas O. Reudink, Sea Girt, and Yu S. Yeh, Freehold Township, Monmouth County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 12, 1981, Ser. No. 224,006
Int. Cl.³ H04J 4/00; H04B 7/185
U.S. Cl. 370—50 **5 Claims**



1. A communications system of the type including a plurality of accessing and receiving ground stations which communicate with each other via a satellite, the satellite comprising:

means for receiving a plurality of digital uplink signals from the accessing ground stations, the uplink signals being received as a plurality of equal bandwidth spot-beams which each comprise a plurality of frequency-divided uplink channels;

means for demodulating and regenerating the received uplink signals;

means for routing the demodulated and regenerated signals between a set of input terminals and a set of output terminals to generate corresponding downlink signals;

means for modulating and amplifying the downlink signals, and

means for transmitting the downlink signals to the receiving ground stations,

characterized by

means for multiplexing the signals after regeneration to form high bit rate serial downlink signals as a plurality of equal-bandwidth downlink spot-beams equal to the number of uplink spotbeams, which downlink spotbeams each comprise at least one downlink frequency channel, there being a greater number of frequency-divided uplink channels per uplink spot-beam than there are downlink frequency channels per downlink spot-beam.

4,425,640

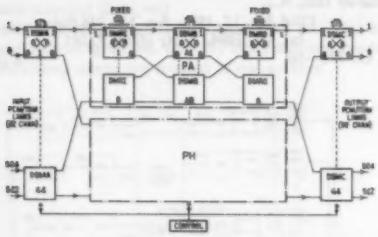
TELECOMMUNICATIONS SWITCHING NETWORK USING DIGITAL SWITCHING MODULES

Alexander S. Philip, and Thomas S. Maddera, both of Wimborne, England, assignors to The Plessey Company plc, Ilford, England

Filed Apr. 20, 1981, Ser. No. 255,487
Claims priority, application United Kingdom, Apr. 24, 1980, 8013555
Int. Cl.³ H04Q 11/04
U.S. Cl. 370—58 **10 Claims**

1. A time division multiplex channel redistribution device having n input paths and n output paths for connection in n interstage links of a multi-stage telecommunication switching network which handles time division multiplexed communication paths and uses digital switching modules, wherein the device comprises n multiplexors (MUX1–MUX8) each having one output and n inputs (A–H), each multiplexor providing

one discrete output path (1–8) for the device and wherein each input path (1–8) is connected to a respective input of each multiplexor, said multiplexors being adapted to be controlled to connect a selected input path to a corresponding output path in accordance with address information fed to the multiplexors



from a cyclic address generator (CAG) in the device, said cyclic address generator being pre-programmed with a fixed channel allocation address pattern arranged such that the channels on each input path are distributed equally over the output paths without changing the position of the channels within a multiplexed frame.

4,425,641
TIME DIVISION MULTIPLEX TELECOMMUNICATION DIGITAL SWITCHING MODULES

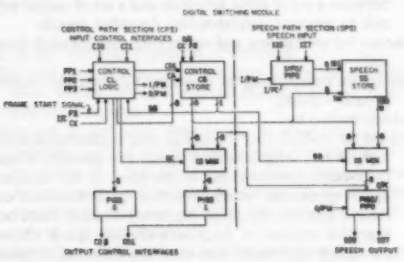
Joseph A. French, Poole; Thomas S. Maddern, and Alexander S. Philip, both of Wimborne, all of England, assignors to The Plessey Company plc, Ilford, England

Filed Jun. 23, 1981, Ser. No. 276,494

Claims priority, application United Kingdom, Jun. 25, 1980, 8020755

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—64 **10 Claims**



1. In a digital switching module for switching any channel on m time division multiplex incoming paths each carrying n digital channels to any channel of m time division multiplex outgoing paths each having n digital channels for use in a time division telecommunications switching network comprising a plurality of stages of such modules and each module includes a control store and a data store, the data store being adapted to receive and store in a cyclic manner the time division multiplex channels on the incoming paths in such manner that each individual time division multiplex channel is allocated an individual data store location on a mutually exclusive basis and whereas the control store is adapted to be read cyclically in synchronism with the channel appearance on the outgoing paths, each individual location of the control store being adapted to store the identity of the data store location to be used to supply the data for the corresponding outgoing path and channel, the improvement comprising an additional control indicator for each control store location which when set to a predetermined state causes the contents of the control store location currently being selected to be used to supply the data for the corresponding outgoing path and channel to replace the contents of data store location, and each digital switching module includes:

first means for inhibiting the application of the output path of the data store to the outgoing path of the module,

second means for connecting the output path of the control store to the outgoing path of the module, and

third means for detecting the set state of said additional control indicator for causing the contents of the control store currently being selected to be used to supply data for the corresponding outgoing path and channel to replace the contents of data store locations.

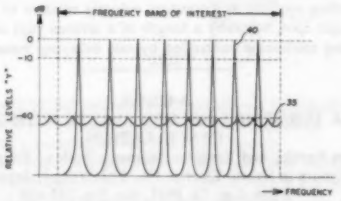
4,425,642
SIMULTANEOUS TRANSMISSION OF TWO INFORMATION SIGNALS WITHIN A BAND-LIMITED COMMUNICATIONS CHANNEL

Donald W. Moses, Minneapolis, Minn.; Charles Hustig, Hudson, Wis., and C. Ray Ballard, Venice, Fla., assignors to Applied Spectrum Technologies, Inc., Minneapolis, Minn.

Filed Jan. 8, 1982, Ser. No. 337,957

Int. Cl.³ H04J *15/00, 11/00*

U.S. Cl. 370—76 **23 Claims**



1. A co-channel communications system for transmitting at least one digital data signal simultaneously with a communications medium signal comprising:

means for generating a plurality of spreading frequencies:

means for combining the data signal and the plurality of spreading frequencies which causes each logic level of the data signal to be transmitted as a multifrequency signal consisting of a separate set of frequencies, each set being spread throughout the bandwidth of the communications medium channel, each of said multifrequency signals having a signal amplitude at a level which is substantially suppressed in relation to the magnitude of the communications medium signal at a signal to signal ratio which is at a non-interfering level and which is a function of the number of frequencies used for transmission of the data signal; and

means for connecting the resulting multifrequency signal to the communications medium for simultaneous transmission with the communication medium signal.

4,425,643
MULTI-SPEED LOGIC ANALYZER

David D. Chapman, Portland; Gerd H. Hoeren, Lake Oswego, and Steven R. Palmquist, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 8, 1981, Ser. No. 271,347

Int. Cl.³ G09G *1/08*; G01R *31/28*

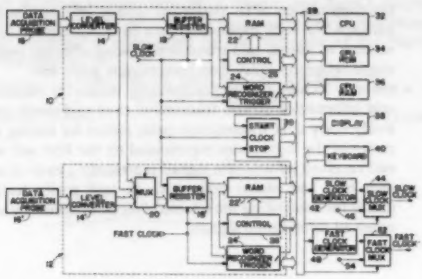
U.S. Cl. 371—20 **8 Claims**

1. A multi-speed logic analyzer, comprising:

first and second logic analyzer sections each including a memory circuit to store input data and a word recognizer to detect a predetermined word from said input data for controlling said memory circuit; and

a counter to count a clock signal in accordance with the outputs from said word recognizers of said first and second logic analyzer sections, wherein said counter starts to count when said word recognizer of said first logic analy-

zer section detects a first predetermined word and stops counting when said word recognizer of said second logic analyzer section detects a second predetermined word;



wherein clock signals for said first and second logic analyzer sections are different from each other.

4,425,644

PCM SIGNAL SYSTEM

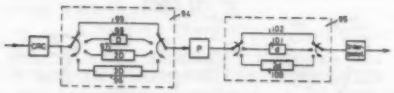
Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,373

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 3022573

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—40 **22 Claims**



1. In a system for processing pulse code modulation signals in the form of a succession of data words and transmitting such signals over a channel, which system includes an input portion having a parity circuit connected for receiving successive groups of the data words and for adding a parity word to each group of data words, and a first interleaving circuit connected for cyclically interleaving the successive groups of data words and their associated parity words and supplying the interleaved words to the input end of the channel, and an output portion having a first de-interleaving circuit connected for cyclically de-interleaving the words arriving at the output end of the channel so that the words, after de-interleaving in the first de-interleaving circuit, are present in the sequence existing before interleaving in the first interleaving circuit, and a parity check circuit connected for evaluating each parity word appearing at the output of said first de-interleaving circuit, and for conducting each data word appearing at the output of said first de-interleaving circuit, the improvement wherein said input portion further comprises a second interleaving circuit having an input connected for receiving the succession of data words and including interleaving means for cyclically interleaving the data words to form the successive groups of data words, said second interleaving circuit having an output connected to said parity circuit for supplying the successive groups of data words to said parity circuit, said output portion further comprises a second de-interleaving circuit connected to said parity check circuit to receive the data words conducted thereby and including de-interleaving means operating in a manner to complement said interleaving means of said second interleaving circuit, and an output connected to conduct the data words provided by said de-interleaving means, and said output portion further comprises interpolation means connected to the output of said second de-interleaving circuit.

4,425,645

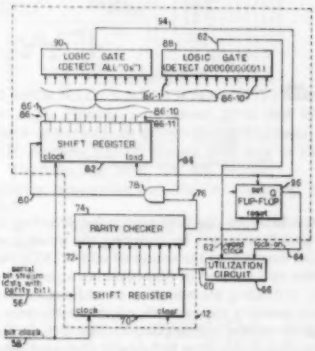
DIGITAL DATA TRANSMISSION WITH PARITY BIT WORD LOCK-ON

Charles S. Weaver, and John M. Yarborough, Jr., both of Palo Alto, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Oct. 15, 1981, Ser. No. 311,783

Int. Cl.³ H04L *7/00*

U.S. Cl. 371—47 **25 Claims**



1. In an electrical system for transmission, recording and playback, or the like, of a serial bit stream, the combination comprising

means for generating a serial bit stream of equal length words, each of which words is M bits in length and includes M-1 non-redundant information bits and a single parity bit,

parity bit lock-on means, and

means for transferring said serial bit stream from said generating means to said parity bit lock-on means,

said parity bit lock-on means including means for parity checking at one bit intervals word length groups of bits of said serial bit stream transferred thereto from said generating means and for locking onto parity bits included in said serial bit stream.

4,425,646

INPUT DATA SYNCHRONIZING CIRCUIT

Kiyoshi Kinoshita, and Takatoshi Ishii, both of Ome, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 8, 1981, Ser. No. 281,492

Claims priority, application Japan, Jul. 11, 1980, 55-93957

Int. Cl.³ H03L *7/00*

U.S. Cl. 371—61 **4 Claims**

1. An input data synchronizing circuit comprising:

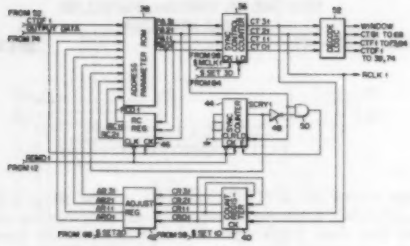
(A) a clock generator;

(B) synchronous control counting means for receiving an initial value, for counting every time a clock signal is supplied from said clock generator, for outputting control signals related to at least a part of said count and representing phase status during current data input and phase status during preceding data input, and for outputting WINDOW signals synchronous with input data;

(C) at least one register for holding control signals, said register being set with said control signals both at a time when said data is input and at a time when immediately preceding data is input;

(D) read-only memory means, addressed at least in part with

said control signals from said register, for outputting correction values as initial values for said synchronous control counting means so that said synchronous control counting means outputs said WINDOW signal in synchronism with said input data at nearly the center of a pulse width of said window signal, said initial values being supplied by said read-only memory means to said synchronous control counting means which outputs said control signals to said register; and



(E) synchronous counting means for detecting achievement of synchronization by counting the number of times said input data is near the center of said WINDOW signal, and when said number of times reaches a predetermined number, providing an indication to address, in part, said read-only memory means so that appropriate ones of said correction values are applied to said synchronous control counting means both before and after said achievement of synchronization.

4,425,647

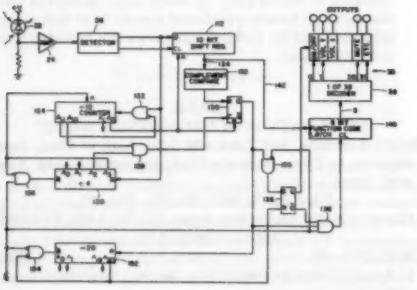
IR REMOTE CONTROL SYSTEM

Johnny Collins, Oak Park, and Melvin C. Hendrickson, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 57,053, Jul. 12, 1979, Pat. No. 4,377,006. This application May 17, 1982, Ser. No. 379,374

Int. Cl.³ G06F *11/00*; H04B *9/00*

U.S. Cl. 371—70 **2 Claims**



1. A system for remotely controlling the operation of one or more consumer electronic apparatus comprising:

a transmitter comprising: means for selecting a function of one of said apparatus to be controlled; encoding means developing a single word multibit code defining said selected function, each of the data bits of said single word multibit code being represented by a first information signal representing the logic state of the data bit and an associated second information signal representing the complementary logic state of the data bit, said first and second information signals comprising a single pulse representing a first logic state or a grouping of at least two relatively closely spaced pulses representing a second logic state; and means for successively transmitting each of said first information signals followed immediately by the transmission of its associated second information signal such that each transmitted data bit comprises the same number of pulses, said transmission being effected over a single relatively noisy data transmission path; and

a remotely located receiver comprising: means for receiving said information signals transmitted over said single relatively noisy data transmission path; means for testing the parity of the logic states represented by the first and second received information signals representing each of said data bits; and means responsive to said parity testing means for controlling the selected function defined by said received information signals.

4,425,648

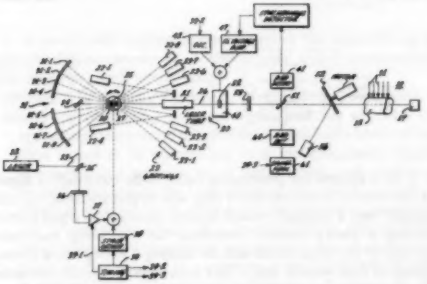
WAVELENGTH SELECTIVITY OF LASERS AND CONTROL THEREOF FOR RAPID ACTION MEASURING TASKS

Sandor Holly, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 29, 1980, Ser. No. 220,862

Int. Cl.³ H01S *3/10*

U.S. Cl. 372—20 **20 Claims**



1. A frequency-selective laser system, comprising:

an optical laser cavity;

a primary reflector serving as a first boundary of said optical laser cavity;

a plurality of wavelength-selective gratings, each one tuned for reflecting radiation of a single wavelength and wherein each grating also serves as a boundary for said optical laser cavity;

means for extracting radiation wherein said means comprises said primary reflector or said wavelength-selective gratings;

an active region containing an active medium capable of lasing at more than one wavelength, being positioned between said primary reflector and said wavelength-selective gratings;

an adjustable mirror being positioned between said active region and said gratings, to provide an optical path for each of said wavelength-selective gratings; and

adjusting means for pivoting said adjustable mirror wherein, in recited sequence, said primary reflector, said active region, said adjustable mirror, and each of said wavelength-selective gratings in turn, are in optical alignment.

4,425,649

FEL GAIN ENHANCEMENT EFFECT BY A STATIC TRANSVERSE MAGNETIC FIELD WITH A LONGITUDINAL GRADIENT

Luis R. Elias, Goleta; John M. J. Madey, and Todd I. Smith, both of Palo Alto, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,845
Int. Cl.³ H01S *3/00*
U.S. Cl. 372—2 **2 Claims**

1. An apparatus for enhancing the conversion of electron energy to laser energy within a free electron laser, the improvement residing in:

(a) means for injecting an electron beam into said laser at a predetermined angle to a segment of the optical axis of said laser;

(b) means for generating a pump wave of predetermined frequency within said laser such that said pump wave oscillates along and has phase fronts perpendicular to said optical axis of said laser; and

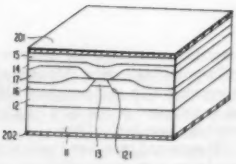
(c) means for producing a static magnetic field having a field vector transverse to and a longitudinal field gradient along said segment of said optical axis of said laser, said magnetic field defining an interaction zone along said segment of said optical axis between said electron beam, said pump wave and said magnetic field in which said conversion of energy from said electron beam to said laser energy is greatly increased.

4,425,650

BURIED HETEROSTRUCTURE LASER DIODE

Ikuo Mito; Mitsuhiro Kitamura; Kazuhisa Kaede, and Kohroh Kobayashi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,773
Claims priority, application Japan, Apr. 15, 1980, 55-48665; May 12, 1980, 55-61671; Sep. 5, 1980, 55-123261
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—46 **7 Claims**



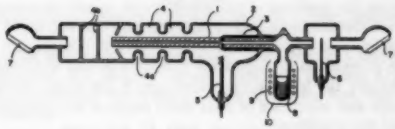
1. A buried heterostructure laser diode comprising a semiconductor crystal having a pair of principal surfaces and a pair of reflective end surfaces constituting an optical resonator, and a pair of electrodes, said semiconductor crystal including a base semiconductor region having a mesa portion and having a first conductivity type, said mesa portion being elongated and extending between said pair of reflective end surfaces and substantially parallel thereto in a stripe geometry, said semiconductor crystal further including a first semiconductor layer provided only on a top surface of said mesa portion and having a band gap smaller than that of said base semiconductor region and extending between said pair of reflective end surfaces in a stripe geometry, a pair of second semiconductor layers provided on said base region and covering side surfaces of said first layer and side surfaces of said mesa portion and having a second conductivity type and a band gap larger than that of said first layer, a pair of third semiconductor layers provided only on the top surfaces of said second layers and having said first conductivity type and a band gap larger than that of said first layer, and a fourth semiconductor layer commonly provided on the top surfaces of said first layer and said third layers and having said second conductivity type and a band gap larger than that of said first layer, said electrodes being provided on said principal surfaces.

4,425,651

ION LASER WITH GAS DISCHARGE VESSEL

Hanns-Peter Popp, Hattingen; Friedrich Pfeil, and Eberhard Schmidt, both of Bochum, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,831
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036112
Int. Cl.³ H01S *3/03*
U.S. Cl. 372—61 **18 Claims**



1. An ion laser of the gas discharge metal-vapor type with cataphoretic vapor transport, comprising:

a gas discharge tube of refractory glass which is substantially impermeable to gas and vapor;

an envelope tube surrounding said gas discharge tube at least in the region thereof in which a discharge takes place and made of a glass of a type selected for having a thermal expansion coefficient of a magnitude close to that of said refractory glass and having impermeability to gas at operating temperatures to which it can practically be cooled, said envelope tube being shaped to provide a plurality of interconnecting condensation chambers;

a container vessel for material supplying vapor connected with said gas discharge tube and equipped with means for heating said material in said vessel;

electrode chambers with electrodes therein and in communication with the interior of said gas discharge tube respectively by opposite ends of the latter, the cathode being an oxide cathode so located as to produce a reversal of the physical direction of the discharge between the interior of said discharge tube and the cathode, and

hollow end pieces aligned with the ends of said discharge tube and spaced therefrom and communicating therewith,

said condensation chambers being so located that condensation of cataphoretically transported vapor of said material takes place during transport of said vapor towards the cathode and towards the one of said end pieces nearer the end of said discharge tube with which said cathode chamber communicates,

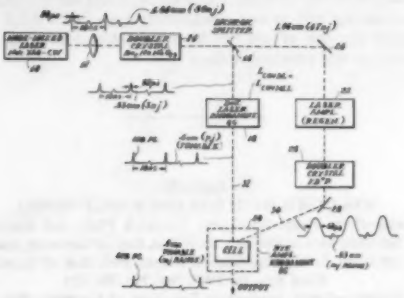
the interiors of said gas discharge tube, container vessel, electrode chambers and end pieces being all so interconnected as to maintain pressure therein below atmospheric pressure for providing laser operation capable of radiating a high intensity parallel laser beam out of one of said end pieces.

4,425,652

LASER SYSTEM USING ORGANIC DYE AMPLIFIER

Gerard Mourou, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,842
Int. Cl.³ H01S 3/00
U.S. Cl. 372—69 22 Claims



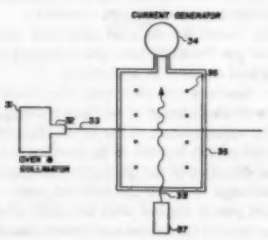
1. A laser system for generating high energy, ultra short laser pulses which system comprises: a dye amplifier; means for applying a laser signal pulse of duration in the pico and subpico second range to be amplified by said dye amplifier; and means for applying a pump laser pulse to said dye amplifier synchronously with said signal pulse such that said signal pulse reaches said dye amplifier substantially simultaneously with the completion of population inversion in said dye amplifier whereby the high energy pulses which are in the milli-joule range and which are of ultra short duration are generated by said dye amplifier.

4,425,653

ATOMIC BEAM DEVICE USING OPTICAL PUMPING

Leonard S. Cutler, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1980, Ser. No. 164,980
Int. Cl.³ H01S 3/091
U.S. Cl. 372—70 12 Claims



1. A method of producing source particles in a single state, said particles being selected from the group consisting of atoms, and ions, and said method comprising the steps of:

(a) selecting optical pumping frequencies and polarizations (i) to avoid pumping said particles out of the trap state and (ii) to pump particles in all other ground level states to at least one excited energy level from which the particles can decay into the trap state; and

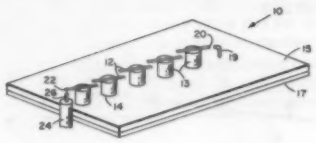
(b) illuminating the source particles with light having the selected optical pumping frequencies.

4,425,654

ULTRAVIOLET PREIONIZER FOR HIGH POWER LASER

William D. Dible, Verona, and Cheug L. Chen, Pittsburgh, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 8, 1981, Ser. No. 328,765
Int. Cl.³ H01S 3/097
U.S. Cl. 372—86 4 Claims



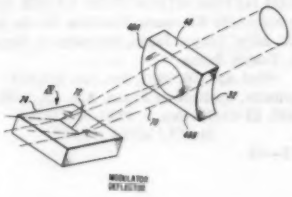
1. A spark array for providing ultraviolet preionization in a gas laser comprising: a plurality of spark gaps disposed in an array to provide a series connected current path therethrough during application of high voltage electrical energy thereto, said spark gaps comprise a plurality of conductor wires of substantially equal length, and each wire being supported on and electrically connected to a cylindrical metal post so that respective wire ends of intermediate wires are adjacent for providing respective spark gaps, and first and second conductive means for supplying a high voltage electrical energy across said spark gaps.

4,425,655

DIRECT FOCUSSED GAS LASER

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 276,237
Int. Cl.³ H01S 3/08
U.S. Cl. 372—101 4 Claims



1. A gas laser (9) comprising an outer envelope (10), an elongated capillary discharge tube (11) coaxially disposed and structurally integrated with said envelope (10), end members (16, 17) sealed to each end of the tube envelope (10) wherein the improvement is characterized by:

lens means (49) mounted in said end members (16, 17), one of said lens means being completely mirrored on the inside surface thereof for complete internal reflection and the other lens means being partially mirrored to allow the laser light to be emitted from said laser (9), the said other lens means having the outside surface thereof in a shape such that the lens means focuses said laser light at a predetermined point away from said laser, wherein the outside surface (48*a*) of said other lens means (48) is cylindrically formed such that the output light beam is wedge shaped (70) and focused to a line (72), said outside surface of said other lens means being in the shape of a toroid, said toroid having a cylindrical radius of first dimension (48*a*) and a second bent cylindrical radius of a second dimension (48*b*), wherein the first dimension (48*a*) controls the position of said line (72) and the second dimension (48*b*) controls the length of said line (72).

4,425,656

COVER FOR ELECTRIC-ARC CRUCIBLE

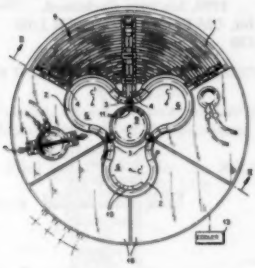
Herbert Kuhlmann, Bochum, Fed. Rep. of Germany, assignor to SIDEPAL S.A. Societe Industrielle de Participations Luxembourgeoise, Luxembourg, Luxembourg

Filed Feb. 24, 1982, Ser. No. 351,995

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147338

Int. Cl.³ F27D 1/12, 1/18

U.S. Cl. 373—74 6 Claims



1. A cover for a metallurgical vessel, said cover comprising:

an annular outer tubular collar defining a center;

a plurality of tubular legs extending inward from said collar toward said center;

an annular inner tubular collar fixed to said legs and defining a plurality of throughgoing electrode passages, said inner collar being formed by

respective inwardly concave and substantially circularly arcuate tubular sections defining said passages and each defining a respective one of the electrode passages and

respective inwardly convex and tubular elbow sections carried on said legs between said passages and forming an undulating annulus with said inwardly concave sections;

a multiplicity of cooling tubes extending between said collars and legs and connected thereto; and

means for circulating a coolant through said tubes, collars, and legs.

4,425,657

ELECTRODE FOR ARC FURNACES

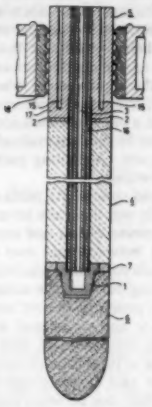
Hanns G. Bauer, Witten-Bommern, Fed. Rep. of Germany; Dieter H. Zöllner, Claremorris, Ireland; Josef Otto; Josef Mühlenbeck, both of Wetter, Fed. Rep. of Germany; Friedrich Rittmann, Rückersdorf, Fed. Rep. of Germany; Claudio Conradty, Röthenbach a.d. Pegnitz, Fed. Rep. of Germany; Inge Lauterbach-Dammler, Nuremberg, Fed. Rep. of Germany, and Horst Sonke, Leinburg, Fed. Rep. of Germany, assignors to C. Conradty Nurnberg GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,563

Int. Cl.³ H05B 7/08

U.S. Cl. 373—93 12 Claims

1. An electrode for arc furnaces, having s top, metallic portion and a consumable, replaceable bottom portion, the portions being substantially cylindrical and including a threadable interconnection therebetween, said top portion including a liquid cooling means having header and and return ducts, the improvement comprising: the top portion being formed from an inner part and a single outer part including a detachable connection therebetween, said inner part containing a liquid conducting chamber including said header and return ducts,



and wherein said outer part radially surrounds only a longitudinal portion of said inner part.

4,425,658

CONDUCTOR ARRANGEMENT FOR A THREE-PHASE ELECTRIC ARC FURNACE

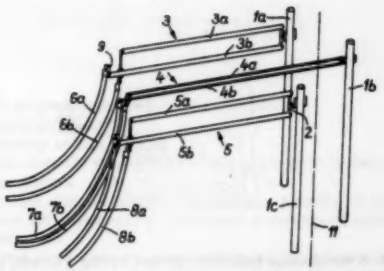
Karlheinz Bretthauer, and Friedhelm Milde, both of Clausthal-Zellerfeld, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Feb. 23, 1982, Ser. No. 351,733

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106827

Int. Cl.³ H05B 7/11

U.S. Cl. 373—103 24 Claims



1. In an electrode and conductor arrangement for a three-phase electric arc furnace supplied with power from a transformer, comprising: three electrodes which extend downwardly into the furnace; supporting arms supporting said electrodes; and means defining a plurality of current conducting paths each composed of a rigid conductor, which is fixed to a respective supporting arm and is conductively connected to a respective electrode, and a flexible conductor connected in series between said rigid conductor and the transformer, said rigid conductors extending parallel to one another, said electrodes being spaced from one another in the horizontal direction transverse to the longitudinal axes of said rigid conductors such that two of said electrodes are outer electrodes and the third electrode is a center electrode disposed between said two outer electrodes, at least one conducting path being conduc-

tively connected to said center electrode and a respective group of conducting paths being conductively connected to each said outer electrode, the conductors of all conducting paths associated with the same outer electrode being vertically spaced from one another, and the conductors associated with said center electrode being positioned between, and axially symmetrically relative to, the conductors associated with said two outer electrodes, the improvement wherein:

said at least one conducting path associated with said center electrode is spaced a minimum distance, in the horizontal direction transverse to the longitudinal axes of said rigid conductors, from said conducting paths associated with each said outer electrode;

there are only two said conducting paths connected to each said outer electrode and there are no more than two said conducting paths connected to said center electrode;

the vertical spacing between said two conducting paths associated with each said outer electrode is greater than the maximum spacing between the actual positions of said electrodes and the positions thereof required to achieve electrical symmetry and associated with identical distances between the lower end of each electrode and its point of connection to its associated rigid conductors; and

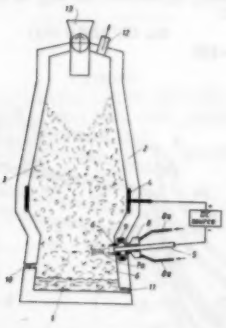
the distance between said center electrode and the transformer is greater than that between each said outer electrode and the transformer, for causing the current flow in said arrangement to be electrically symmetrical and minimizing the line inductances of said conducting paths.

4,425,659

METAL OXIDE REDUCTION FURNACE

Sven-Elnar Stenkvist, Västerås, Sweden, assignor to ASEA AB, Västerås, Sweden

Filed Aug. 18, 1981, Ser. No. 293,708
Claims priority, application Sweden, Sep. 17, 1980, 8006522
Int. Cl.³ H05B 7/00
U.S. Cl. 373—108 **4 Claims**



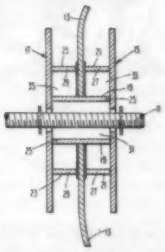
1. A metal oxide reduction furnace having a hearth, a shaft extending upwardly from the hearth and adapted to contain a coke column above the hearth, contact means for connecting electric power to the coke column, an electric arcing electrode extending transversely through a side of the shaft and adapted to be connected with the power so as to form an arc with a side of the coke column and burn a cavity therein, said furnace being adapted to operate as a DC arc furnace and in which said contact means is an anode vertically offset from the arcing electrode so as to be controlled by the coke column and the arcing electrode is a cathode, the shaft's said side having a hole through which the arcing electrode extends and the hole forming an annular space around the electrode, feeding means for feeding into the cavity in particulate form the metal oxide to be reduced together with a reducing agent, said feeding means being an annular nozzle pointing through the annular space towards the arcing electrode's tip and surrounding the arcing electrode and adapted to be fed with the metal oxide and reducing agent carried by a pressurized gas flow so as to form an annular flow surrounding the arcing electrode's tip and the arc it forms with the coke column.

4,425,660

SHIELDING ARRANGEMENT FOR A VACUUM FURNACE

William R. Jones, 244 Hampshire Dr., Chalfont, Pa. 18914

Filed Jun. 22, 1981, Ser. No. 275,870
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.
Int. Cl.³ F27D 11/00; H05B 3/00
U.S. Cl. 373—130 **7 Claims**



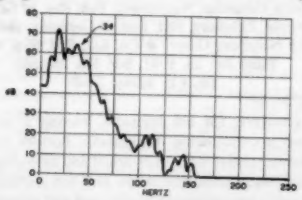
1. In a vacuum furnace system, having a heating chamber, at least one heating element and a rod member passing through said heating element to provide a base means for securing said heating element to the wall of said heating chamber, an electrical insulating and support arrangement to be used with said rod comprising in combination: first electrical insulating means having first and second ends and formed to encompass a section of said rod and disposed to pass through said heating element; first and second shields, each formed and disposed to have said rod pass therethrough and further disposed so that said first shield is in substantial abutment with said first end of said first electrical insulating means and said second shield is in substantial abutment with said second end of said first electrical insulating means whereby one surface of each of said shields faces the other, said first and second shields being formed so that at least said facing surfaces are of graphite material; and means disposed with said rod to fix said shield in said substantial abutment with said first electrical insulating means.

4,425,661

DATA UNDER VOICE COMMUNICATIONS SYSTEM

Donald W. Moses, Minneapolis, Minn.; Charles Hustig, Hudson, Wis., and C. Ray Ballard, Venice, Fla., assignors to Applied Spectrum Technologies, Inc., Minneapolis, Minn.

Filed Sep. 3, 1981, Ser. No. 299,173
Int. Cl.³ H04J 6/00; H04L 9/00
U.S. Cl. 375—1 **40 Claims**



27. A method for communicating data information over a

communications medium at frequencies less than voice transmission frequencies comprising:

generating at least one digital data signal;

generating at least one spreading frequency;

combining the data signal and spreading frequency to create a spreading code for transmission of the data which causes the data to be transmitted at three or more fundamental frequencies; and

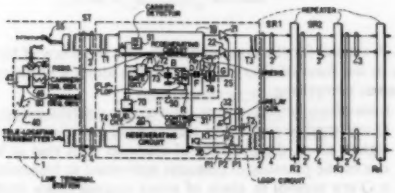
transmitting the fundamental frequencies as a coherent frequency modulated signal having a constantly varying fundamental frequency less than the voice frequency bandwidth.

4,425,662

SYSTEM FOR TELE-LOCATING REGENERATIVE REPEATERS

Jean-Louis Jeandot, Limours, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Sep. 15, 1981, Ser. No. 302,282
Int. Cl.³ H04B *3/46*
U.S. Cl. 375—4 **9 Claims**



1. A system of tele-locating regenerative repeaters which are included in a transmission path between two terminal stations for transmitting at a predetermined rate digital information signals in one direction by means of a forward path and in the other direction by means of a return path, one of the terminal stations comprising a tele-location transmitter for transmitting tele-location commands to the repeaters by means of the forward path, the transmitter comprising a regenerator for generating carrier signals at the predetermined rate, a command sequence generator and an amplitude modulator for on-off modulation of said carrier signals in accordance with output signals of said command sequence generator, and each of said repeaters comprising, arranged between said forward path and said return path, a loop circuit comprising an associated control circuit and a detector, said associated control circuit cooperating with said detector for detecting the presence of carrier signals in the forward path for receiving said tele-location commands, said command sequence generator being arranged for applying to said control circuits of said repeaters command sequences which are each formed by a pulse train having at least one pulse, which pulse train is transmitted by interrupting said carrier signals by means of said amplitude modulator.

4,425,663

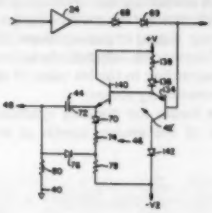
LOW INPUT CAPACITANCE DATA NETWORK TRANSCEIVER

Tat C. Lam, Fremont, Calif., assignor to TCL, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 159,364, Jun. 13, 1980, Pat. No. 4,317,205. This application Feb. 20, 1981, Ser. No. 236,363
Int. Cl.³ H04B *1/48*
U.S. Cl. 375—7 **7 Claims**

1. A data communications transceiver of the type which transmits signals to a communicating medium and receives signals therefrom which are generated by another transceiver, and which includes an output driver for outputting data signals to the medium and an amplifier for receiving signals from the medium, wherein the improvement comprises

a first pair of diodes, the cathode of one of the diodes being connected to the anode of the other diode of the pair, with the pair of diodes being connected in series between the driver and the communicating medium,



a second pair of diodes, and wherein

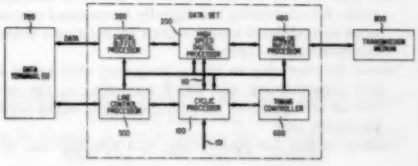
the receiving amplifier includes an amplifying transistor having an input lead and a pair of output leads, each one of the second pair of diodes being connected in series with a separate one of the output leads.

4,425,664

MULTIPORT PROGRAMMABLE DIGITAL DATA SET

David N. Sherman, Middletown, and Shiv P. Verma, Lakewood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 851,156, Nov. 14, 1977, abandoned, which is a continuation of Ser. No. 635,299, Nov. 26, 1975, abandoned. This application May 7, 1982, Ser. No. 376,262
Int. Cl.³ H04B *3/50*; H04M *3/00*; G06F *3/00*
U.S. Cl. 375—8 **11 Claims**



1. A programmable data modem comprising:

a digital processor,

a plurality of data ports,

a first alterable memory containing a plurality of data set parameters,

a second alterable memory containing a plurality of basic data set implementing operational sequences of instructions, and

control means responsive to said first and second memories for controlling said digital processor simultaneously in accordance with preselected data set parameters and preselected operational sequences to process the various signals at first ones of said ports according to different parameters, and to deliver processed signals to second ones of said ports.

4,425,665

FSK VOICEBAND MODEM USING DIGITAL FILTERS

Michael K. Stauffer, Redwood City, Calif., assignor to Advanced Micro Devices, Inc., Del.

Filed Sep. 24, 1981, Ser. No. 305,014
Int. Cl.³ H04L *27/10, 27/18*
U.S. Cl. 375—9 **10 Claims**

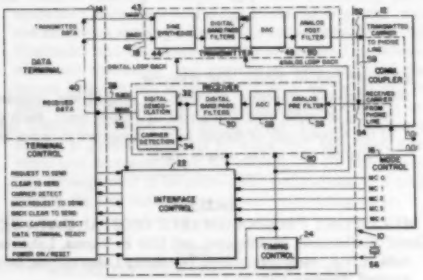
1. An integrated circuit apparatus for modulating and demodulating an analog signal with digital data, said apparatus

transmitting and receiving the analog signal in preselected types of voiceband communication channels, said apparatus comprising:

means for modulating the analog signal with digital data and to produce a frequency shift keyed analog signal according to a selected one of a plurality of frequency shift keyed signaling standards;

means for transmitting the frequency shift keyed analog signal, said transmitting means includes means for digitally synthesizing digital representations of analog signals at selected frequencies, wherein the selected frequencies are selected according to the bit value of digital data supplied to said transmitting means;

wherein the means for digitally synthesizing digital representations of the analog signals at selected frequencies



represents the analog signals as time-incremented digital signals;

means for incrementing the time-incremented digital signals to generate a digital representation of a sine wave signal having said selected frequency;

said transmitting means includes a digital-to analog converter for converting the digitally synthesized representations to modulated analog signals for exciting a voiceband communication channel;

means for receiving an analog frequency shift keyed signal and demodulating said signal according to the selected one of said plurality of frequency shift keyed signaling standards; and

control means for preselecting said selected one of said plurality of signaling standards in accordance with the preselected type of voiceband communication channel.

4,425,666

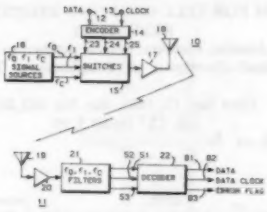
DATA ENCODING AND DECODING COMMUNICATION SYSTEM FOR THREE FREQUENCY FSK MODULATION AND METHOD THEREFOR

Edward J. Groth, Jr., Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jan. 29, 1982, Ser. No. 344,149

Int. Cl.³ H03K *13/24*

U.S. Cl. 375—48 **15 Claims**



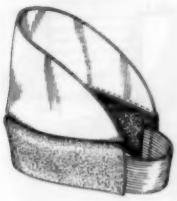
1. A system for the communication of a sequence of bits of data in the form of Q-ary symbol signals along a plurality of channels comprising:

a transmitter having means for serially encoding into the Q-ary symbol signal and transmitting the Q-ary symbol signals along the plurality of channels such that at least one of the plurality of channels is devoted to transmitting a Q-ary symbol in place of every second Q-ary symbol from the beginning of a string of repeated Q-ary symbols such that no two Q-ary symbols in succession are transmitted along the same channel; and

a receiver being responsive to said transmitter, having means for serially receiving and decoding said Q-ary symbol signals to reconstruct the sequence of bits of data, and being triggered by transmitting a Q-ary symbol signal along said at least one channel devoted to transmitting every second Q-ary symbol from the beginning of a string of repeated Q-ary symbols to repeat output of a preceding Q-ary symbol.

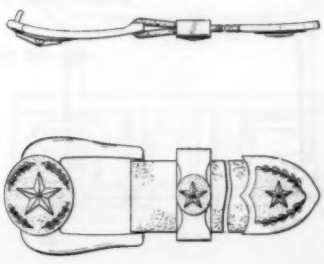
JANUARY 10, 1984

272,104
BOOT HEEL PROTECTOR
James R. Campbell, 1217 Randy Dr., Irving, Tex. 75060
Filed Aug. 17, 1981, Ser. No. 293,259
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—277

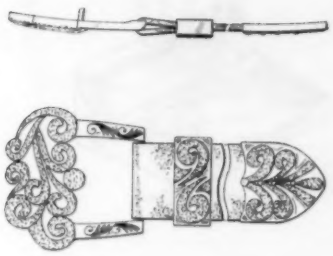


272,105
GLOVE PROTECTOR
Donald D. Dryzal, Box 8, Strongstown, Pa. 15957
Filed Jun. 8, 1981, Ser. No. 271,611
Term of patent 14 years
Int. Cl. D02—*06*
U.S. Cl. D2—361

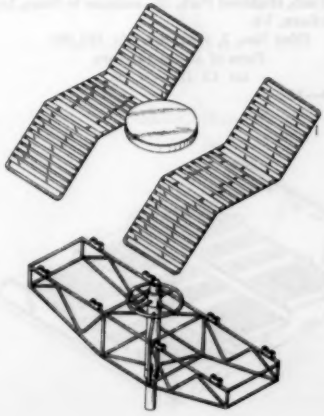
272,106
BELT
Quenton T. Elliott, 3218 Sackett, Houston, Tex. 77098, and Quenton T. Elliott, Jr., 4516 Holt, Bellaire, Tex. 77401
Filed Apr. 9, 1981, Ser. No. 252,303
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—385



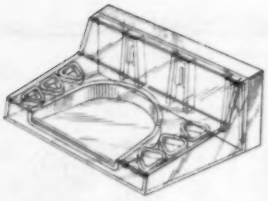
272,107
BELT
Quenton T. Elliott, 3218 Sackett, Houston, Tex. 77098, and Quenton T. Elliott, Jr., 4516 Holt, Bellaire, Tex. 77401
Filed Apr. 9, 1981, Ser. No. 252,308
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—385



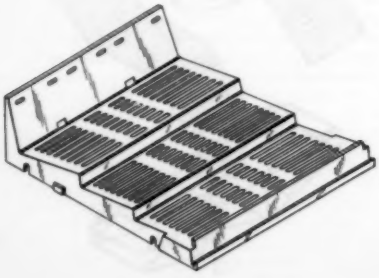
272,108
COMBINED STATIONARY TABLE AND ROTATABLE LOUNGE SEATING UNIT
James W. Morris, Jr., 2320 Overton Rd., Augusta, Ga. 30904
Filed Aug. 3, 1981, Ser. No. 289,698
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—42



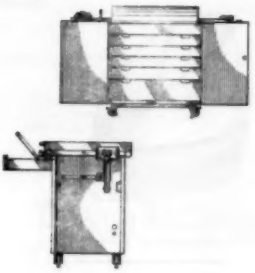
272,109
COMBINED TUMBLER AND TOOTHBRUSH FIXTURE
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Oct. 8, 1981, Ser. No. 309,681
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—92



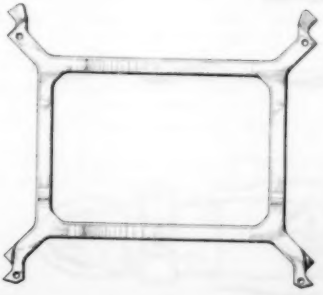
272,110
DISPLAY SHELF MODULE
Ronald H. Taub, Highland Park, Ill., assignor to Mars, Incorporated, McLean, Va.
Filed Nov. 2, 1981, Ser. No. 317,289
Term of patent 14 years
Int. Cl. D6—*04, 06*
U.S. Cl. D6—132



272,111
COMBINED WORK BENCH AND TOOL CABINET
Antonio Anzalone, 17 Thatcher St., Boston, Mass. 02113
Filed Jun. 17, 1980, Ser. No. 160,389
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—168



272,112
CHAIR FRAME
Wulf Schneider, and Ulrich Böhme, both of Stuttgart, Fed. Rep. of Germany
Filed Aug. 7, 1979, Ser. No. 65,143
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 79R13212[U]
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191

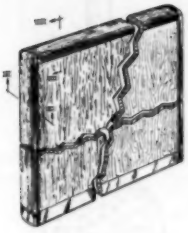


272,113

FURNITURE PANEL

Robert L. Russell, Grand Rapids; Paul L. Propst, Holland; Donald A. Richardson, Kentwood, and Carl B. Hinrichs, Grand Haven, all of Mich., assignors to Stow Davis Furniture Company, Grand Rapids, Mich.

Filed Jun. 1, 1981, Ser. No. 269,350
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

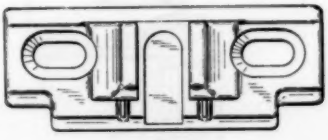


272,114

MOUNTING PLATE FOR A HINGE

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Sep. 4, 1981, Ser. No. 299,524
Claims priority, application Austria, May 3, 1981, 26.318/81; May 3, 1981, 26.324/81
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—194



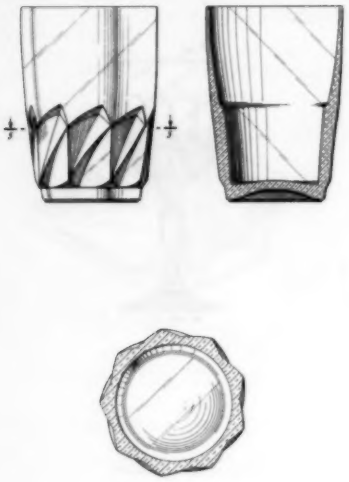
272,115

GOBLET OR SIMILAR ARTICLE

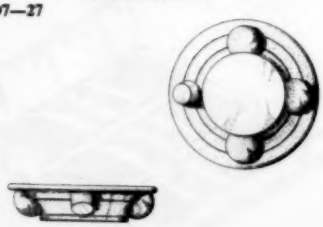
Henri Prieur, Reims, France, assignor to Societe Francaise des Verreries Mechaniques Champenoises, Reims, France

Filed Jul. 31, 1981, Ser. No. 288,866
Claims priority, application France, Feb. 12, 1981, 81 50
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—13

272,116
TUMBLER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaGarenne, 62510 Arques, France
Filed Sep. 1, 1981, Ser. No. 298,494
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—14



272,117
PLATE
Margaret L. Lyon, 25 Hammersley, Poughkeepsie, N.Y. 12601, and Robert A. Birch, Gardner Hollow Rd., Poughquag, N.Y. 12570
Filed Mar. 3, 1981, Ser. No. 239,998
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—27



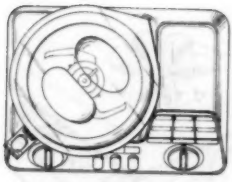
272,118
SKIMMER
Fred S. Steiner, 154 Combs Ave., Woodmere, N.Y. 11598
Filed May 21, 1981, Ser. No. 265,803
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47

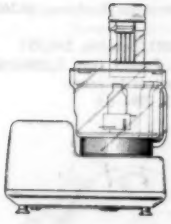
272,119
TURNER
Fred S. Steiner, 154 Combs Ave., Woodmere, N.Y. 11598
Filed May 21, 1981, Ser. No. 265,802
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—102

272,120
FOOD PROCESSOR

Atsushi Sawada, Kawanishi, and Shinichi Nagayama, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 1, 1981, Ser. No. 269,194
Claims priority, application Japan, Dec. 2, 1980, 55-50342
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—384





272,121
SCISSORS

Clair H. Gingher, Jr., Greensboro, N.C., assignor to Gingher, Inc., Greensboro, N.C.

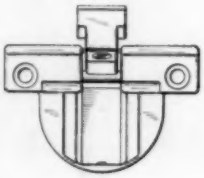
Filed Nov. 2, 1979, Ser. No. 90,544
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57

272,122
FOOT OPERATED VICE

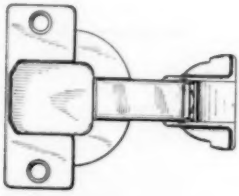
Masahiko Nakamura, Matsuzaka, and Takashi Yokoyama, Mie, both of Japan, assignors to Kabushiki Kaisha Matsuzaka Tekkosho, Mie, Japan

Filed Dec. 18, 1980, Ser. No. 218,014
Claims priority, application Japan, Jun. 27, 1980, 55-25901; Jun. 27, 1980, 55-25902; Nov. 28, 1980, 55-49884
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—71

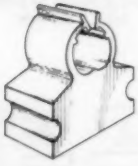
272,123
HINGE ARM
Erich Rock, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Sep. 4, 1981, Ser. No. 299,523
Claims priority, application Austria, May 3, 1981, 26.318/81; May 3, 1981, 26.324/81
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—323



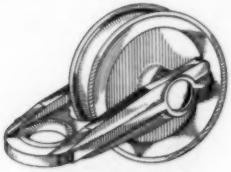
272,124
FURNITURE HINGE ARM
Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Sep. 4, 1981, Ser. No. 299,526
Claims priority, application Austria, May 3, 1981, 26.318/81; May 3, 1981, 26.324/81
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—323



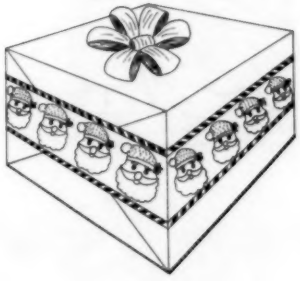
272,125
COMBINATION REBAR SUPPORT AND NAILING BLOCK
David A. Van Doren, P.O. Box 1008, Hays, Kans. 67601
Filed Mar. 9, 1981, Ser. No. 241,751
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



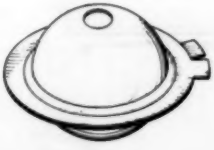
272,126
PULLEY
Raymond P. Pennoyer, Jr., 97 Sturbridge La., Trumbull, Conn. 06611
Filed May 18, 1981, Ser. No. 266,373
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—360



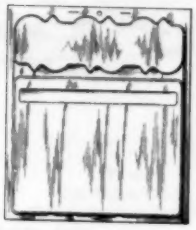
272,127
PACKAGING CONTAINER
Eugene C. Beard, Pittsburgh, Pa., assignor to Papercraft Corporation, Pittsburgh, Pa.
Filed Feb. 17, 1981, Ser. No. 234,889
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—312



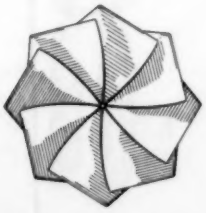
272,128
PACKAGING CONTAINER FOR ICE CREAM OR THE LIKE
Christian Parmentier, 4, Avenue des Bouleaux, 44260 Savenay Malville, France
Filed Apr. 30, 1981, Ser. No. 260,097
Claims priority, application France, Nov. 3, 1980, 80 803 388
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—345



272,129
SHOWER CURTAIN AND HOOK PACKAGE
Noel Levine, New York City, N.Y., assignor to Associated Products, Inc., New York, N.Y.
Filed Jul. 20, 1981, Ser. No. 284,936
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415



272,130
CONTAINER FOR FOOD OR THE LIKE
Tamio Miyazaki, 3-21-29, Gakuen-nishicho, Kodaira-shi, Tokyo, Japan
Filed Apr. 28, 1981, Ser. No. 258,453
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—431



272,131
CONTAINER HANDLE OR SIMILAR ARTICLE
Thomas H. Hayes, Westport, Conn., assignor to Ethyl Corporation, Richmond, Va.
Filed Jun. 3, 1981, Ser. No. 269,542
The portion of the term of this patent subsequent to Dec. 2, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—434

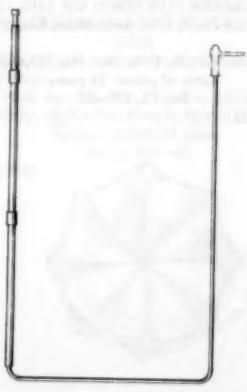
272,132
CONTAINER HANDLE OR SIMILAR ARTICLE
Thomas H. Hayes, Westport, Conn., assignor to Ethyl Corporation, Richmond, Va.
Filed Jun. 3, 1981, Ser. No. 269,543
The portion of the term of this patent subsequent to Dec. 2, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—434

272,133
CONTAINER HANDLE OR SIMILAR ARTICLE
Thomas H. Hayes, Westport, Conn., assignor to Ethyl Corporation, Richmond, Va.
Filed Jun. 3, 1981, Ser. No. 269,545
The portion of the term of this patent subsequent to Dec. 2, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—99
U.S. Cl. D9—434

272,134
CONTAINER HANDLE OR SIMILAR ARTICLE
Thomas H. Hayes, Westport, Conn., assignor to Ethyl Corporation, Richmond, Va.
Filed Jun. 3, 1981, Ser. No. 269,547
The portion of the term of this patent subsequent to Dec. 2, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—99
U.S. Cl. D9—434

272,135
CONTAINER HANDLE OR SIMILAR ARTICLE
Thomas H. Hayes, Westport, Conn., assignor to Ethyl Corporation, Richmond, Va.
Filed Jun. 3, 1981, Ser. No. 269,548
The portion of the term of this patent subsequent to Apr. 21, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—99
U.S. Cl. D9—434

272,136
MAGNETIC TIMING PROBE
Donald C. McKinnon, and Edward L. Tury, both of Cheyboygan, Mich., assignors to Fox Valley Instrument Company, Cheboygan, Mich.
Filed Oct. 14, 1980, Ser. No. 196,344
Term of patent 14 years
Int. Cl. D10—04
U.S. Cl. D10—80

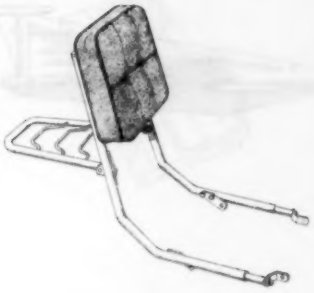


272,137
MOTORCAR
Toshi Oshika, Wako, and Yukio Kurosu, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1981, Ser. No. 295,124
Claims priority, application Japan, Apr. 2, 1981, 56-14046
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91

272,138
MOTORCYCLE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Aug. 25, 1981, Ser. No. 296,237
Claims priority, application Japan, Feb. 27, 1981, 56-8202
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

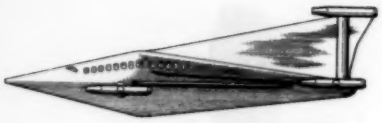
272,139
COMBINED BOTTLE MOUNT AND BOTTLE FOR BICYCLES
Matthew S. Boughton, Stamford, Conn., assignor to Cannondale Corporation, Georgetown, Conn.
Filed Sep. 2, 1981, Ser. No. 298,651
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

272,140
COMBINED BACKREST AND LUGGAGE RACK
Mark Turkington, and Philip Turkington, both of Willimantic, Conn., assignors to Connecticut Cycle Accessories, Inc., Willimantic, Conn.
Filed May 21, 1982, Ser. No. 380,601
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—119

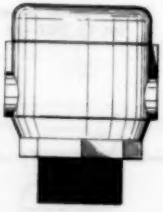


272,141
COMBINED VEHICLE ROOF INTERIOR INSTRUMENT PANEL, REAR VIEW MIRROR AND SUN VISORS
Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 247,907
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, MR 12 272
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—192

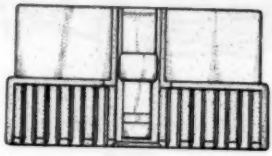
272,142
AIRPLANE
Perry B. Johnson, 169 N. Main St., Paterson, N.J. 07522
Filed Jul. 2, 1980, Ser. No. 165,362
The portion of the term of this patent subsequent to Jun. 30, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—326



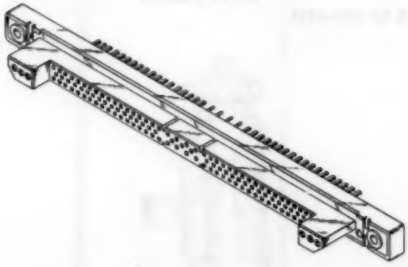
272,143
ELECTRICAL TERMINAL BOX
Alan J. Varney, Thornton Heath, England, assignor to Eltron (London) Limited, Croydon, England
Filed Sep. 16, 1981, Ser. No. 302,559
Claims priority, application United Kingdom, Jul. 28, 1981, 1001695
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—13



272,144
CONNECTOR HOUSING
Hisaki Mayumi, Tsu, Japan, assignor to Tokai Electric Wire Co., Ltd., Yokakichi, Japan
Filed Apr. 23, 1981, Ser. No. 256,834
Claims priority, application Japan, Feb. 2, 1980, 55-3271
Term of patent 14 years
Int. Cl. D13—*24*
U.S. Cl. D13—24

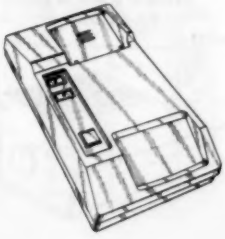


272,145
MULTI-CONTACT ELECTRICAL CONNECTOR RECEPTACLE
Albert Casciotti, Hershey, and Robert D. Hollyday, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 28, 1981, Ser. No. 335,045
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



272,146
TELEPHONE INSTRUMENT
Michael Mo, 5th Floor, 87 Sec. 2, Patient PEIS, Shin-Dian, Taipai, Taiwan
Filed Aug. 18, 1981, Ser. No. 293,873
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

272,147
TELEPHONE BASE STATION
John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed May 1, 1981, Ser. No. 259,602
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

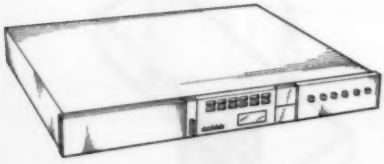


272,148
TELEPHONE BASE
John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed May 1, 1981, Ser. No. 259,606
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

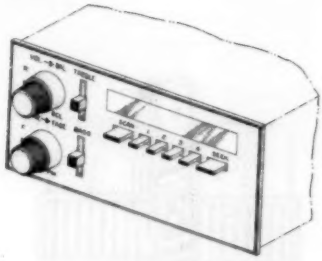
272,149
TELEPHONE STAND OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 84,067, Oct. 12, 1979, Pat. No. Des. 265,401. This application Jan. 18, 1982, Ser. No. 340,329
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

272,150
TELEPHONE STAND OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 84,067, Oct. 12, 1979, Pat. No. Des. 265,401. This application Jan. 18, 1982, Ser. No. 340,330
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

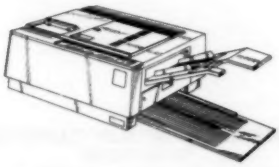
272,151
AUDIO TUNER
Toshihito Nomura, and Hirotaka Imai, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jul. 10, 1981, Ser. No. 282,108
Claims priority, application Japan, Jan. 13, 1981, 56-630
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—71



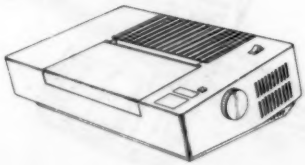
272,152
RADIO CONTROL UNIT
Walter K. Gierschick, West Bloomfield; William M. Jenkins, Jr., Sterling Heights, and Keith Kesling, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 29, 1981, Ser. No. 277,679
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—76



272,153
FACSIMILE TRANSCEIVER
Takamasa Shintani, Chigasaki; Koyo Nagasawa, Yokohama; Hiroshi Takemura, Sagamihara, and Tadashi Kikuchi, Hiratsuka, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan
Filed Aug. 10, 1981, Ser. No. 291,687
Claims priority, application Japan, Mar. 2, 1981, 56-8602
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—94

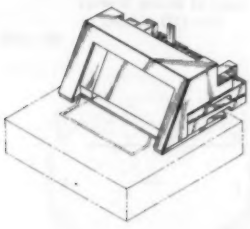


272,154
PRINTER
Yasuhiro Saito, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Sep. 21, 1981, Ser. No. 304,014
Claims priority, application Japan, Mar. 19, 1981, 56-011-513
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111

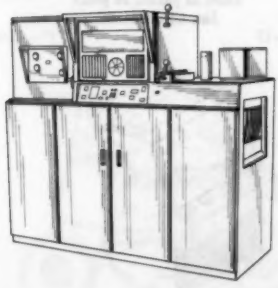


272,155
PRISM COVER FOR SLR CAMERAS
Stephen Bartlett, London, England, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 26, 1981, Ser. No. 228,438
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—10

272,156
AUTOMATIC SHEET FEED DEVICE OR THE LIKE
Herbert E. Meister, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 16, 1980, Ser. No. 159,715
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—27



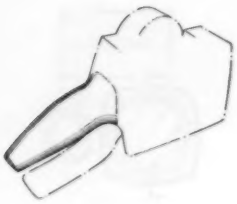
272,157
COPYING CAMERA/PROCESSOR UNIT
Gary E. Raymond, 755 S. Rainbow Dr., Hollywood, Fla. 33201
Filed Nov. 30, 1981, Ser. No. 326,120
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—28

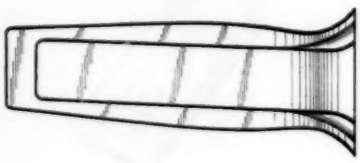


272,158
PENLIGHT MAGNIFIER ATTACHMENT
Albert Saferstein, and Gilbert Spector, both of 480 W. Putnam Ave., Greenwich, Conn. 06830
Filed Sep. 11, 1981, Ser. No. 301,337
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—135

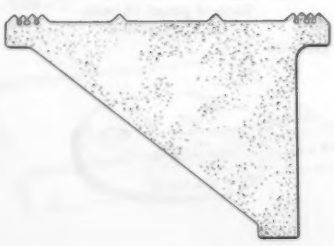
272,159
FLUTE
Juan del Rio, 43 Malaga Cove Plz., Palos Verdes Estates, Calif. 90274
Filed Mar. 23, 1981, Ser. No. 246,666
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—10

272,160
HANDLE FOR A LABELLING APPARATUS
Werner Becker, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 22, 1980, Ser. No. 219,374
Claims priority, application Switzerland, Jul. 4, 1980, 111 270/80
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19



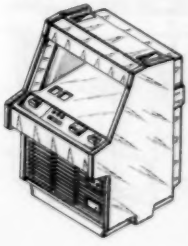


272,161
DIVIDER SHEET FOR A CONTINUOUS FORM BINDER
Glenn R. Lodge, Mt. Prospect, and John F. Denison, Lindenhurst, both of Ill., assignors to Wilson Jones Company, Chicago, Ill.
Filed Oct. 13, 1981, Ser. No. 311,209
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—33



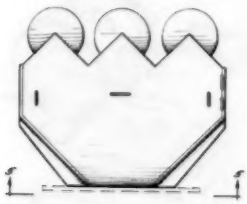
272,162
VENDING MACHINE
Kenneth J. McPhail, 33 Meadowlea Rd., Chatham, Ontario N7M 5C3, Canada
Filed Jul. 20, 1981, Ser. No. 284,962
Claims priority, application Canada, Feb. 2, 1981, 02-02-81-2
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—7

272,163
HAND HOLDABLE HOUSING FOR A GAME
Toshiaki Takizawa, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 8, 1982, Ser. No. 338,187
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



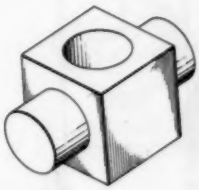
272,164
POKER MACHINE CABINET
Joseph R. Heywood, Chorleywood, England, assignor to Ainsworth Nominee Pty. Ltd., Rosebery, Australia
Filed Mar. 17, 1982, Ser. No. 358,928
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—38

272,165
RANDOM CHANCE GAME DEVICE
Andrew Jones, Jr., 27 Booker St., Pikeville, N.C. 27863
Filed Jul. 31, 1981, Ser. No. 288,692
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—39

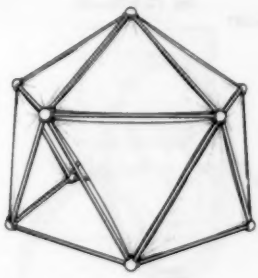


272,166
RIDING TOY
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Sep. 18, 1981, Ser. No. 303,414
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—78

272,167
TOY BLOCK
Yasushi Chatani, Tokorozawa, and Toshio Tsuchikura, Koshigaya, both of Japan, assignors to Kawada Co., Ltd., Tokyo, Japan
Filed Aug. 7, 1979, Ser. No. 64,489
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

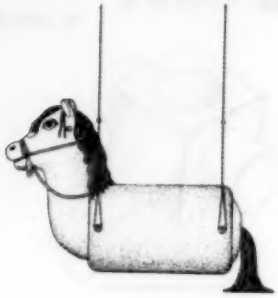


272,168
PLAYHOUSE
Ulrich Sielaff, 118 Vaughn Ct., Madison, Wis. 53705
Filed Jun. 2, 1981, Ser. No. 264,181
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

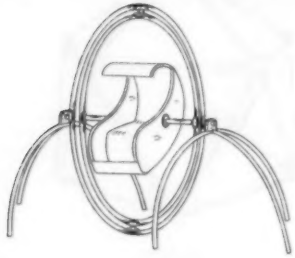


272,169
SIMULATIVE TOY TABLE OR SIMILAR ARTICLE
John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Dec. 29, 1980, Ser. No. 220,841
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121

272,170
HORSE BARREL SWING OR SIMILAR ARTICLE
Donna J. Noller, 821 Ashland Ave., Buffalo, N.Y. 14222
Filed Dec. 14, 1981, Ser. No. 330,164
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



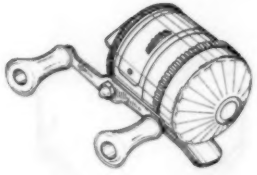
272,171
CHAIR RIDE
Jerry G. Lankford, 133 John Roach La., Owens Cross Roads, Ala. 35763
Filed May 18, 1981, Ser. No. 264,643
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247



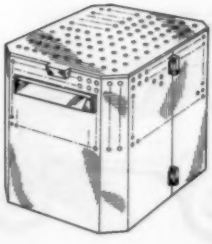
272,172
TENT
Pierre Jutras, 392 Guilbault, Longueuil, Quebec, Canada (J4H 2T8)
Filed Apr. 20, 1981, Ser. No. 255,492
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

272,173
RIFLE
Ennio Mattarelli, Via Belvedere 10, Zola Predosa (Bo), Italy
Filed Jun. 1, 1981, Ser. No. 268,709
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6

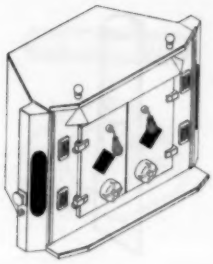
272,174
CLOSED FACE SPINNING REEL
R. Dell Hull, Catoosa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Continuation of Ser. No. 92,093, Nov. 7, 1979, which is a continuation of Ser. No. 814,787, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 740,251, Nov. 10, 1976, abandoned. This application Nov. 9, 1981, Ser. No. 319,289
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



272,175
FILTER HOUSING
Laurence R. Gedye, East Doncaster, Australia, assignor to L.R. & N.R. Gedye Pty. Ltd., Australia
Filed Feb. 9, 1981, Ser. No. 232,715
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



272,176
WOOD STOVE
James F. Chastain, Jr., P.O. Box 267, Fountain Inn, S.C. 29644
Filed Feb. 5, 1982, Ser. No. 346,265
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93

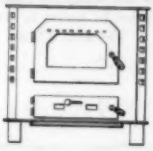


272,177
SOLID FUEL STOVE
Marius C. Schuller, 112 Cork St., W., Guelph, Ontario, Canada (N1H 2X5)
Filed Sep. 22, 1980, Ser. No. 189,699
Claims priority, application Canada, May 1, 1980, 01-05-80-2
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

272,178
WOOD STOVE
Hugh Price, Carlisle, Mass., assignor to Cohen & Peck, Inc., Cambridge, Mass.
Filed Feb. 23, 1982, Ser. No. 351,434
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

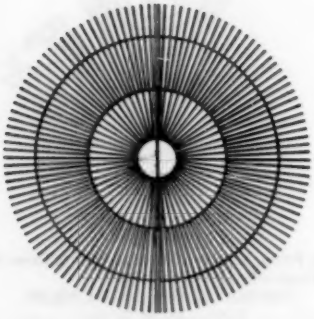
272,179
WOODSTOVE
Frank D. Leach, Box 473, Spring Green, Wis. 53588
Filed Mar. 1, 1982, Ser. No. 353,771
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

272,180
STOVE
Richard A. Russo, Abington, Mass., assignor to Russo Manufacturing Corporation, Randolph, Mass.
Filed Mar. 22, 1982, Ser. No. 360,356
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

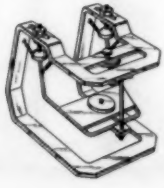


272,181
MIST ELIMINATOR BLADE
Richard Sixsmith, Burlington, Canada, assignor to Plasticair Systems, Mississauga, Canada
Filed Jun. 9, 1981, Ser. No. 271,757
Claims priority, application Canada, Dec. 12, 1980, 12-12-80-1
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

272,182
FAN GUARD
Paul E. Fowler, and Walter E. Madson, both of Oshkosh, Wis., assignors to Northwest Environmental Systems, Inc., Oshkosh, Wis.
Filed Jan. 19, 1981, Ser. No. 225,999
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—164

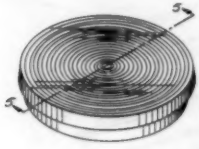


272,183
CENTAL ARTICULATOR
Alan J. DeLiso, 2872 Anza, Costa Mesa, Calif. 92626
Filed Nov. 23, 1981, Ser. No. 323,753
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

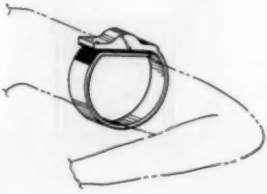


272,184
DISPOSABLE PNEUMOTACH TUBE
John Karpowicz, Havertown, Pa., assignor to Boehringer Laboratories, Wynnewood, Pa.
Filed Aug. 27, 1982, Ser. No. 412,228
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

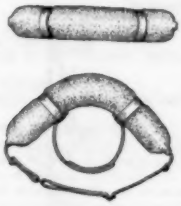
272,185
PETRI DISH
Joseph D. Schlesinger, 502 San Antonio, Ojai, Calif. 93023
Filed Mar. 6, 1981, Ser. No. 241,245
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29



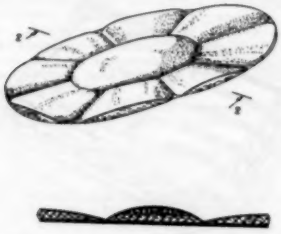
272,186
TOURNIQUET AND PRESSURE APPLYING DEVICE
Russell E. Peck, 3893 Rohr, Pontiac, Mich. 48055
Filed May 21, 1981, Ser. No. 265,877
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—34



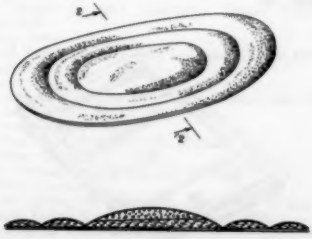
272,187
ANTI-SNORING COLLAR
Edward L. C. Broomes, 2301 Lituanica, East Chicago, Ind. 46312
Filed Jul. 30, 1981, Ser. No. 288,523
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—34



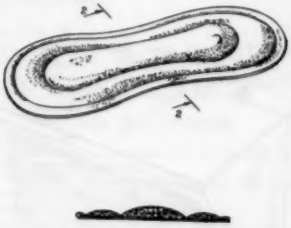
272,188
DISPOSABLE PANTY PAD
Vincent R. Sneider, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319
Filed Mar. 17, 1981, Ser. No. 244,813
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51



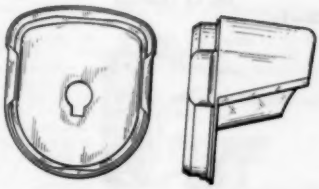
272,189
DISPOSABLE PANTY PAD
Vincent R. Sneider, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319
Filed Mar. 17, 1981, Ser. No. 244,814
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51



272,190
DISPOSABLE PANTY PAD
Vincent R. Sneider, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319
Filed Mar. 17, 1981, Ser. No. 244,815
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51

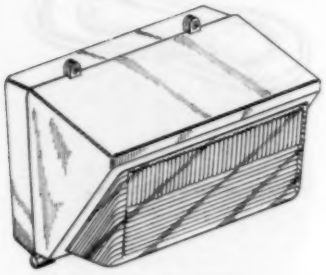


272,191
NASAL ASPIRATION DEVICE
William H. Van Ewyk, Lelystad, Netherlands, assignor to Tetra Consultants, Inc., New Rochelle, N.Y.
Filed Jun. 11, 1981, Ser. No. 272,632
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—62

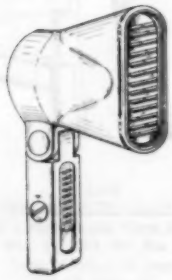


272,192
BUILDING STRUCTURE
Frank B. Arenas, 3810 San Carlos, Tampa, Fla. 33609
Filed Mar. 4, 1982, Ser. No. 354,619
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17

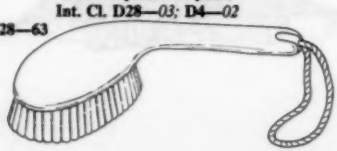
272,193
WALL MOUNTED LIGHT FIXTURE
Richard Sangiamo, Roselle, N.J., assignor to Keene Corporation, New York, N.Y.
Filed Dec. 1, 1980, Ser. No. 211,692
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85



272,194
HAIR DRYER
Sigeru Suzuki, Susono, Japan, assignor to Sanyei Corporation, Japan
Filed Feb. 25, 1982, Ser. No. 352,384
Claims priority, application United Kingdom, Aug. 27, 1981, 811,002,221
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—16

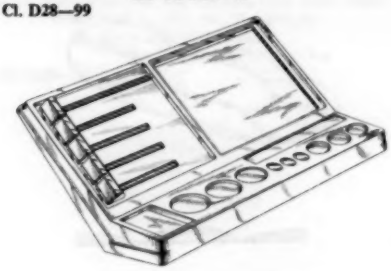


272,195
BRUSH
Robin V. Colemore-Williams, Auckland, New Zealand, assignor to Merryware Industries Limited, Auckland, New Zealand
Filed Sep. 25, 1980, Ser. No. 190,557
Claims priority, application New Zealand, Mar. 26, 1980, 16483
Term of patent 14 years
Int. Cl. D28—*03*; D4—*02*
U.S. Cl. D28—63

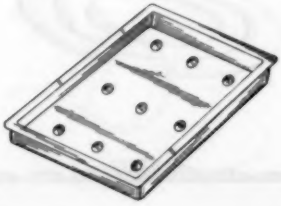


272,196
DENTAL FLOSS HOLDER OR SIMILAR ARTICLE
Shinryo Tawada, 1717 Mott Smith Dr. #907, Honolulu, Hi. 96822
Filed Aug. 14, 1981, Ser. No. 292,728
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D28—64

272,197
MAKEUP CONSOLE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Nov. 18, 1981, Ser. No. 322,410
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—99



272,198
PET LITTER TRAY
Gary S. Webb, 111 Bay Shore Blvd. #A-1, and Wesley Vermillion, 360 Bay Shore Blvd. #102, both of Clearwater, Fla. 33519
Filed Sep. 15, 1980, Ser. No. 187,213
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



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TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Gunther, Bernd-Rainer, 4,425,276, Cl. 260-403.000.

AB Piab: *See*—
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Abe, Tsutomu; Akao, Tsutae; and Ikeda, Akihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for separating T cells from leukocytes. 4,425,237, Cl. 210-692.000.

Aberg, Seard, to Groko Maskin AB. Loading pallet. 4,424,752, Cl. 108-51.100.

Abex Corporation: *See*—
Khandros, Igor Y.; and Heyer, Bruce A., 4,424,853, Cl. 164-57.100.
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Aceti, John G., to RCA Corporation. Apparatus for measuring the dimensions of delicate parts. 4,424,630, Cl. 33-174.00L.

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Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Smit, Roelof C. K., 4,425,353, Cl. 424-267.000.

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Kirchhoff, Ernst; Rander, Alfred; and Adolf, Gunter, 4,424,695, Cl. 72-128.000.

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Mauer, Alexander; Wasel-Nielen, Horst-Dieter; and Adrian, Renate, 4,425,253, Cl. 252-135.000.

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Godfroid, Jean-Jacques; and Thuillier, Jean, 4,425,352, Cl. 424-267.000.

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Yamazaki, Haruyuki; Akatsu, Yasuaki; and Sakaguchi, Seiichiro, 4,424,770, Cl. 122-488.000.

Agfa-Gevaert N.V.: *See*—
De Jaeger, Antoine A.; De Lamper, Gina C.; Poot, Albert L.; and Wagemans, Albert P., 4,425,420, Cl. 430-204.000.
Rutges, Antonius A.; Mertens, Ludovicus M.; and Van Grasdorff, Maurits W., 4,425,421, Cl. 430-238.000.

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Leighton, Francis, 4,424,738, Cl. 91-422.000.

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LaVanture, Alonzo A., 4,424,656, Cl. 52-584.000.

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Akita, Mitsugi: *See*—
Murayama, Masato; and Akita, Mitsugi, 4,424,880, Cl. 181-129.000.

Akita, Shinji: *See*—
Numano, Masachika; Akita, Shinji; and Morita, Minoru, 4,424,616, Cl. 29-33.00T.

Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Smit, Roelof C. K., to ACF Chemiefarma NV. Analgesic 5-oxygenated-6,7-benzomorphan derivatives. 4,425,353, Cl. 424-267.000.

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Albert, Howard. Boxing glove. 4,424,595, Cl. 2-18.000.

Alberto-Culver Company: *See*—
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Adams, Sherman C., 4,424,646, Cl. 49-141.000.

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Alferness, Clifton A.: *See*—
Newman, Bill H.; and Alferness, Clifton A., 4,424,806, Cl. 128-28.000.

Algas, Armando: *See*—
Bliznak, John B.; and Algas, Armando, 4,425,164, Cl. 106-150.000.

Allen, Gerald F. Electric shock prod. 4,424,932, Cl. 231-2.00E.

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Maeland, Arnulf J.; Libowitz, George G.; and Rak, George, 4,425,318, Cl. 423-644.000.
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Trostle, John W., 4,424,655, Cl. 52-520.000.

Alvino, William M.; and Fuller, Timothy J., to Westinghouse Electric Corp. Method of preparing electrophorettable polymer emulsions. 4,425,467, Cl. 524-600.000.

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Farrell, Christopher J.; Tsai, Boh C.; and Wachtel, James A., 4,425,410, Cl. 428-516.000.
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Dowden, Anthony S., 4,424,994, Cl. 292-318.000.

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Tilly, Lynn K.; and Bergquist, Ernest C., 4,424,750, Cl. 105-206.00R.

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Andress, Carlos; and Riggs, William F., to Oreprep Chemicals, Inc. Separation of molybdenite from its mixture with other sulfide ores. 4,425,230, Cl. 209-167.000.

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Lynn, John D.; and Bartusiak, R. Donald, 4,425,228, Cl. 209-17.000.

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Degen, Hans-Juergen; Guender, Wolf; Linhart, Friedrich; Auhorn, Werner; Frey, Guenter; Streit, Werner; and Fikentscher, Rolf, 4,425,238, Cl. 210-666.000.
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Bilstad, Arnold C., 4,425,113, Cl. 604-6.000.
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Beecham Group Limited: *See*—
James, Michael H., 4,425,332, Cl. 424-94.000.

Beer, Gunter; Pesch, Wolfgang; Friedemann, Wolfgang; and Kupfer, Manfred, to Henkel Kommanditgesellschaft Auf Aktien; and Hansawerke Lurmann, Schutte & Co. Method for the production of more water-resistant foamed elements from waterglass containing natural latex dispersion. 4,425,291, Cl. 264-42.000.

Beer, Henri B., to Diamond Shamrock Corporation. Anode with lead base and method of making same. 4,425,217, Cl. 204-290.00F.

Beisswenger, Hans: *See*—
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Paliard, Maurice, 4,425,163, Cl. 106-100.000.

Belanger, Inc.: *See*—
Belanger, James A.; Wentworth, Robert J.; and Astley, Graham J., 4,424,602, Cl. 15-97.00B.

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Tsaliovich, Anatoly; and Kincaid, John, 4,425,542, Cl. 324-58.00R.

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Acampora, Anthony; Reudink, Douglas O.; and Yeh, Yu S., 4,425,639, Cl. 370-50.000.
Bessette, Jeffrey R.; and Kohl, Paul A., 4,425,196, Cl. 204-15.000.
Bishop, Thomas P.; and Picus, Susan J., 4,425,618, Cl. 364-300.000.
Dragone, Corrado, 4,425,566, Cl. 343-781.00P.
Sherman, David N.; and Verma, Shiv P., 4,425,664, Cl. 375-8.000.

Belloni, Aldo: *See*—
Zeller, Rainer; Belloni, Aldo; and Heisel, Michael, 4,425,317, Cl. 423-574.00R.

Beloit Corporation: *See*—
Cronin, Dennis C., 4,425,190, Cl. 162-358.000.

Bely, Vladimir A.; Sviridenok, Anatoly I.; Savkin, Valentin G.; Meshkov, Vladimir V.; and Myshkin, Nikolai K. Composite self-lubricating material. 4,425,247, Cl. 252-12.000.

Bemis Company, Inc.: *See*—
Cooper, Barry A., 4,425,268, Cl. 524-110.000.

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Tresselt, Carl P., 4,425,567, Cl. 343-373.000.
Whiteside, Arliss E.; and Wolber, William G., 4,425,561, Cl. 340-347.0AD.

Benedyk, Joseph C.; McGlone, William; and Amos, Homer, to Brunswick Corporation. Low modulus, small diameter fibers and products made therefrom. 4,425,393, Cl. 428-95.000.

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Berkowitz, Daniel; Bennett, Alan B.; Secrist, John L.; and Milette, Debra A., 4,425,367, Cl. 426-89.000.

Berczi, Charles N., to Milliken Research Corporation. Fabrics for use in composite sheeting. 4,425,398, Cl. 428-253.000.

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Bergeron, Ned A., to B.W.B. Controls, Inc. Crane boom warning actuator. 4,424,909, Cl. 212-153.000.

Berglund, Rickey T. Implantable device for intravascular access. 4,425,119, Cl. 604-175.000.

Bergmann, Franz J.: *See*—
Neunhoeffer, Otto; Wilhelm, Gerhard; Hockenberger, Lothar; Bergmann, Franz J.; and Endruscheit, Peter, 4,425,236, Cl. 210-638.000.

Bergquist, Ernest C.: *See*—
Tilly, Lynn K.; and Bergquist, Ernest C., 4,424,750, Cl. 105-206.00R.

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Schilling, Hans-Dieter; and Grabenhorst, Ulrich, 4,425,303, Cl. 422-142.000.

Berkowitz, Daniel; Bennett, Alan B.; Secrist, John L.; and Milette, Debra A., to United States of America, Army. Method of producing thermally processed egg products. 4,425,367, Cl. 426-89.000.

Berney, Jean-Claude, to Jean-Claude Berney SA. Timepiece with a device for the control of a stepping motor. 4,425,538, Cl. 318-696.000.

Bernhardt, Karl-Heinz; and Strzala, Helmut, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH. Apparatus for heating and drying articles. 4,424,633, Cl. 34-75.000.

Bershas, James P., to Owens-Corning Fiberglas Corporation. Mats for asphalt underlay. 4,425,399, Cl. 428-288.000.

Berthold, Richard; and Louis, William J., to Sandoz Ltd. 3-Aminopropoxyphenyl derivatives and pharmaceutical compositions containing them. 4,425,362, Cl. 424-322.000.

Bertin, Jean; and Frost, Jonathan R., to Synthelabo. Therapeutically useful oxygen derivatives of 3,7a-diazacyclohepta[j,k]fluorenes. 4,425,351, Cl. 424-262.000.

Bertrand, Philippe; and Machilliot, Jean-Pierre, to Labavia S.G.E. Speed reducer control device for a vehicle having two independent pressurized fluid braking circuits. 4,425,006, Cl. 303-3.000.

Bessette, Jeffrey R.; and Kohl, Paul A., to Bell Telephone Laboratories, Incorporated. Photoelectrochemical plating of silver. 4,425,196, Cl. 204-15.000.

Best Lock Corporation: *See*—
Best, Walter E.; and Foshee, William R., 4,424,693, Cl. 70-369.000.
Foshee, William R., 4,424,691, Cl. 70-224.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Key-removable lock core. 4,424,693, Cl. 70-369.000.

Bethlehem Steel Corporation: *See*—
Jones, Duane T.; and Eberhardt, Nikolai, 4,425,505, Cl. 250-359.100.
Lynn, John D.; and Bartusiak, R. Donald, 4,425,228, Cl. 209-17.000.

Bidwell, Robert E.: *See*—
Kurtz, Leonard D.; and Bidwell, Robert E., 4,425,125, Cl. 604-321.000.

Bieri, Rudolf; and Klaesi, Jakob. Container with extendable legs. 4,424,912, Cl. 217-122.000.

Billett, Ronald J.; Anderson, David N.; and Easter, William M., to FMC Corporation. Apparatus for extracting frozen confections. 4,425,089, Cl. 425-438.000.

Bilstad, Arnold C., to Baxter Travenol Laboratories, Inc. Flow control mechanism for a plasmaspheresis assembly or the like. 4,425,113, Cl. 604-6.000.

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Bilz, Reiner; and Fauth, Otto, to Otto Bilz Werkzeugfabrik Kommandit-Gesellschaft. Machine tool chuck. 4,425,060, Cl. 408-6.000.

Bingham, Dennis M. Baton and club securing device. 4,424,923, Cl. 224-251.000.

Biohol Corporation: *See*—
Roth, Ernest R., 4,425,137, Cl. 44-56.000.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and Bidwell, Robert E., 4,425,125, Cl. 604-321.000.

Bird Mobiles, Inc.: *See*—
Oppenheimer, Edgar D., Jr., 4,425,388, Cl. 428-16.000.

Birkle, Siegfried; Gehring, Johann; and Stoeger, Klaus, to Siemens Aktiengesellschaft. Device for electrodeposition of aluminum. 4,425,211, Cl. 204-198.000.

Bishop, Thomas P.; and Picus, Susan J., to Bell Telephone Laboratories, Incorporated. Method and apparatus for introducing program changes in program-controlled systems. 4,425,618, Cl. 364-300.000.

Blackmer, David E.; and Welland, David R., to DBX, Inc. Differential amplifier stage having bias compensating means. 4,425,551, Cl. 330-261.000.

Bland, Charles: *See*—
Squires, George; and Bland, Charles, 4,424,605, Cl. 16-94.00R.

Blasnik, Steven L.: *See*—
Muhlfelder, Ludwig; Phillips, Kevin J.; and Blasnik, Steven L., 4,424,948, Cl. 244-166.000.

Blepp, Martin, to J. Hengstler K.G. Housing for data entry equipment. 4,425,014, Cl. 312-284.000.

Bliznak, John B.; and Algas, Armando, to Alberto-Culver Company. Aerosol cookware lubricant composition. 4,425,164, Cl. 106-150.000.

Blochlinger, Ernst, to SIG Schweizerische Industrie-Gesellschaft. Entry stairs for vehicles. 4,424,751, Cl. 105-447.000.

Bloembergen, Roel; and Verhave, Jan A., to Shell Oil Company. Flame retardant thermally insulating material. 4,425,440, Cl. 521-54.000.

Blondy, Rene; and Crohas, Henri, to Compagnie Francaise Des Petroles. Marine platform adapted to facilitate the detection of possible cracks. 4,425,054, Cl. 405-211.000.

Blum, William P.: *See*—
Crawford, Richard R.; Blum, William P.; and Naramore, David C., 4,425,275, Cl. 260-397.250.

Bobowski, George: *See*—
Hoefle, Milton L.; and Bobowski, George, 4,425,355, Cl. 424-274.000.

Boden, Ogden W. Lock for gripping cords or the like. 4,424,609, Cl. 24-134.00R.

Boden, Richard M.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Branched chain ketones used in augmenting or enhancing the aroma of perfumes, colognes and perfumed articles and the like process for preparing same. 4,425,264, Cl. 252-522.00R.

Boden, Richard M.; Tyszkiewicz, Theodore J.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Branched chain alkenyl methyl carbonates, uses thereof in augmenting or enhancing the aroma of perfume compositions, colognes and perfumed articles and formate intermediates useful in preparing same. 4,425,265, Cl. 252-522.00R.

Boden, Richard M.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,425,365, Cl. 426-3.000.

Bodin, Ove: *See*—
Granlind, Ingmar; and Bodin, Ove, 4,424,872, Cl. 180-24.020.

Boeckeler, Rudolph H.; and Prom, James R., to Freeman Chemical Corporation. Dual cure coating compositions. 4,425,207, Cl. 204-159.140.

Boegli, Serge; and Lebet, Jean-Pierre, to F. J. Burrus & Co.; and Baumgartner Papier SA. Production of cigarette filter units. 4,425,106, Cl. 493-45.000.

Boehringer Mannheim GmbH: *See*—
Wolff, Hans P.; Heerdt, Ruth; Hubner, Manfred, deceased; Kuhnle, Hans; and Schmidt, Felix H., 4,425,360, Cl. 424-309.000.

Boehringer, Wilfred E.; and Walker, James V., to McDonnell Douglas Corp. Hydraulic flowmeter. 4,424,716, Cl. 73-861.560.

Boeing Company, The: *See*—
Krezak, John E., 4,425,067, Cl. 411-500.000.

Bogardus, Fred D. Solar collector. 4,424,803, Cl. 126-429.000.

Boileau, Christopher W., to Thiokol Corporation. Lead detonator shock absorber. 4,424,746, Cl. 102-254.000.

Boller, Thomas E.: *See*—
Guerra, Salvatore; Meyer, John H.; and Boller, Thomas E., 4,425,184, Cl. 156-655.000.

Bond, John A.: *See*—
Lee, Pok F.; and Bond, John A., 4,425,483, Cl. 179-170.200.

Bookout, Leonard M. Fuel apparatus. 4,424,788, Cl. 123-557.000.

Bookwalter, John R.; and West, Alan I., to Codman & Shurtleff, Inc. Multi-position ratchet mechanism. 4,424,724, Cl. 74-540.000.

Boozer, Allen H.: *See*—
Fisch, Nathaniel J.; and Boozer, Allen H., 4,425,295, Cl. 376-123.000.

Bordelon, Chester M.; Hunt, Richard M.; and Wheeler, Robert A., to Western Electric Company. Ring armature electroacoustic transducer. 4,425,482, Cl. 179-120.000.

Borg-Warner Corporation: *See*—
Wills, Frank E., 4,425,539, Cl. 318-771.000.
Woody, John C., 4,424,666, Cl. 60-39.141.

Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, to Montedison S.p.A. Acyl anilines exerting a fungicidal action. 4,425,357, Cl. 424-278.000.

Boutonnet, Magali: *See*—
Stenius, Per; Kizling, Jerzy; and Boutonnet, Magali, 4,425,261, Cl. 502-339.000.

Bouzard, Daniel: *See*—
Kaplan, Murray A.; Bouzard, Daniel; Perol, Claude; Stemer, Jacques; and Weber, Abraham, 4,425,348, Cl. 424-257.000.

Bowers, Kenneth R.: *See*—
Resnick, Joseph A., 4,424,911, Cl. 215-365.000.

Bowyer, William H.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,425,500, Cl. 235-400.000.

Boyle, Bede A. Hydro/pressurized fluidized bed combustor. 4,424,766, Cl. 122-4.00D.

Bozeman, John W.: *See*—
Zwirn, Robert; and Bozeman, John W., 4,424,943, Cl. 244-3.110.

Brachthauser, Kunibert; and Herchenbach, Horst, to Klockner-Humboldt-Deutz AG. System for burning fine-grained material, particularly for the manufacture of cement clinkers. 4,425,092, Cl. 432-106.000.

Branson, Terry L.: *See*—
Van Horne, Arthur C.; and Branson, Terry L., 4,425,046, Cl. 400-208.000.

Braun, Heinz: *See*—
Armstrong, Frederick R.; Braun, Heinz; Bubik, Alfred; Storr, Helmut; and Turobin-Ort, Karl, 4,425,187, Cl. 162-299.000.

Bretthauer, Karlheinz; and Milde, Friedhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Conductor arrangement for a three-phase electric arc furnace. 4,425,658, Cl. 373-103.000.

Breuer, Heinz-Guenter: *See*—
Janssen, Karl-Egon; and Breuer, Heinz-Guenter, 4,424,734, Cl. 89-16.000.

Bridges, Wilbur L.: *See*—
Cargle, Virgil H.; and Bridges, Wilbur L., 4,425,252, Cl. 252-88.000.

Bridges, William J.: *See*—
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Bridgestone Tire Company Limited: *See*—
Dan, Takuya; and Fujita, Akio, 4,424,960, Cl. 267-8.00R.
Kitazawa, Yoichi; and Yamazaki, Naoki, 4,424,847, Cl. 152-352.00R.

Brigham, Alan: *See*—
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Brignac, David G., to Exxon Research and Engineering Co. Removal of sulfur from process streams. 4,425,312, Cl. 423-230.000.

Briscoe, James E.: *See*—
Penny, Glenn S.; and Briscoe, James E., 4,425,242, Cl. 252-8.55R.

Brisken, Axel F.: *See*—
Smith, Lowell S.; Brisken, Axel F.; and Horner, Michael S., 4,425,525, Cl. 310-336.000.

Bristol-Myers Company: *See*—
Kaplan, Murray A.; Bouzard, Daniel; Perol, Claude; Stemer, Jacques; and Weber, Abraham, 4,425,348, Cl. 424-257.000.
Ondris, Joseph F.; and Korn, Felix, 4,424,897, Cl. 206-45.140.
Brosh, Amnon. Planar coil apparatus employing a stationary and a movable board. 4,425,511, Cl. 307-106.000.
Brown, Boveri & Cie AG: *See*—
Ziegenbein, Botho; and Reiss, Harald, 4,425,413, Cl. 429-112.000.
Brown, Karl L.; Turnbull, William G.; and Jones, Phillip T., to Varian Associates, Inc. Stepped gap achromatic bending magnet. 4,425,506, Cl. 250-396.0ML.
Brown, Milton F., Jr. Air bag explosive device. 4,424,914, Cl. 220-261.000.
Brown, Richard I.: *See*—
Bilstad, Arnold C.; and Brown, Richard I., 4,425,116, Cl. 604-34.000.
Brown & Williamson Tobacco Corporation: *See*—
Silberstein, Donald A.; and McMurtrie, Andrew, 4,424,819, Cl. 131-336.000.
Brownscombe, Thomas F., to Shell Oil Company. Polymer-reinforcing compositions and their preparation. 4,425,384, Cl. 427-221.000.
Brunette Machine Works Ltd.: *See*—
Pousette, Ronald D.; and Sanders, John L., 4,424,840, Cl. 144-246.00F.
Brunswick Corporation: *See*—
Benedyk, Joseph C.; McGlone, William; and Amos, Homer, 4,425,393, Cl. 428-95.000.
Bruttel, Beat; Schneider, Hansjorg; Millioud, Alain; and Rosch, Michael, to Ciba-Geigy Corporation. Process for producing agglomerates of water-soluble dyes. 4,425,134, Cl. 8-524.000.
Bryant, Roger A.; and Riggenbach, David R., to Reliance Electric Company. Fail safe dynamoelectric machine bearing. 4,425,010, Cl. 308-227.000.
Bryhn, Odd R.; and Loken, Tor, to Chevron Research Company. Stabilizing clay soil with hydroxy-aluminum and cellulosic polymers. 4,425,165, Cl. 106-193.00R.
Bryhn, Odd R., to Chevron Research Company. Stabilizing clay soil with a mixture of hydroxy-aluminum and base. 4,425,167, Cl. 106-287.170.
Bubik, Alfred: *See*—
Armstrong, Frederick R.; Braun, Heinz; Bubik, Alfred; Storr, Helmut; and Turobin-Ort, Karl, 4,425,187, Cl. 162-299.000.
Bucchianeri, Richard M., to IVAC Corporation. Mechaniam for screw drive and syringe plunger engagement/disengagement. 4,424,720, Cl. 74-89.150.
Buckman Laboratories, Inc.: *See*—
May, Oscar W.; and Hoekstra, Philip M., 4,425,186, Cl. 162-158.000.
Bucyrus-Erie Company: *See*—
Soeteber, Ronald J., 4,425,007, Cl. 305-11.000.
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay nee Konya, Aranka; Vigh, Zoltan; and Sokorai nee Janki, Agnes, to EGYT Gyogyszervegyeszeti Gyar. Bicyclo(2.2.1)heptane oximes used for plant growth regulating. 4,425,158, Cl. 71-121.000.
Buehler Ltd.: *See*—
Vincent, Donald P.; and Thomiszer, Hubert J., 4,424,649, Cl. 51-92.00R.
Buhler, Marcel E. A.: *See*—
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Buljan, Sergej-Tomislav; and Sarin, Vinod K., to GTE Laboratories Incorporated. Composite ceramic cutting tool. 4,425,141, Cl. 51-309.000.
Bundgen, Joseph. Permanent wave roller. 4,424,821, Cl. 132-40.000.
Bureau de Recherches Geologiques et Minieres: *See*—
Baron, Michel; Baudet, Gerard; Henchiri, Amar; and Hergibo, Pierre-Luc, 4,425,229, Cl. 209-167.000.
Burgess, Anthony J.: *See*—
Padget, John C.; McAloon, Kevin T.; and Burgess, Anthony J., 4,425,465, Cl. 524-450.000.
Burkum, Merlin E.; and O'Regan, Timothy M., to Commonwealth Edison Co. Apparatus for identifying defective electric power distribution capacitors. 4,425,541, Cl. 324-51.000.
Burlington Industries, Inc.: *See*—
Baldwin, A. Frank, 4,425,372, Cl. 427-2.000.
Burns, Fredrick B.: *See*—
Balint, Peter; Burns, Fredrick B.; and Moon, Howard R., 4,424,603, Cl. 15-210.00R.
Burroughs Corporation: *See*—
Ragle, Herbert U.; and DeMoss, Dean, 4,425,592, Cl. 360-99.000.
Burroughs Wellcome Co.: *See*—
Stern, Warren C., 4,425,363, Cl. 424-330.000.
Thorogood, Peter B., 4,425,354, Cl. 424-273.00R.
Busse, Paul J., to InterNorth, Inc. Upflow drying of regenerated ethylene oxide catalysts. 4,425,439, Cl. 502-25.000.
Butterworth, George A. M.; Elias, Robert T.; Miller, Wayne D.; and Shepherd, Robert C., to Johnson & Johnson Baby Products Company. Fibrous material and method of making the same using thermoplastic synthetic wood pulp fibers. 4,425,126, Cl. 604-366.000.
Byrne, Andrew T., to FMC Corporation. Vehicle crewman's hood. 4,424,736, Cl. 89-36.00D.
C.A. Weidmuller GmbH & Co.: *See*—
Stenz, Paul P., 4,425,018, Cl. 339-198.0GA.
C. Conradty Nurnberg GmbH & Co. KG: *See*—
Bauer, Hanns G.; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,425,657, Cl. 373-93.000.
C.G.R. MeV: *See*—
Leboutet, Hubert, 4,425,529, Cl. 315-5.410.
C-I-L Inc.: *See*—
Harrison, Ray E.; and Murray, Charles R., 4,425,108, Cl. 493-220.000.
C. R. Bard, Inc.: *See*—
Spector, Kenneth A.; Samson, Wilfred; and DeMello, Richard M., 4,424,833, Cl. 137-849.000.
Cabot Corporation: *See*—
Goldstein, Sherwood; McClelland, Henry T.; and Scherbner, Paul J., 4,425,168, Cl. 148-2.000.
Caffyn, Allan E.; and Lobik, James L., to Industronics, Inc. Incineration system having cyclonic oxidation chamber. 4,424,755, Cl. 110-246.000.
Cahill, Paul J.; Piasek, Edmund J., deceased; and by Hunt, Evelyn W., administratrix, to Standard Oil Company (Indiana). Benzene sulfonic acid modified aromatic Mannich products from alkyl phenols. 4,425,245, Cl. 252-33.000.
Cahill, Paul J.; Piasek, Edmund J., deceased; and by Hunt, Evelyn W., administrator, to Standard Oil Company (Indiana). Benzene sulfonic acid catalyzed aromatic Mannich products from alkyl phenols. 4,425,249, Cl. 252-51.50R.
Cake, Marcus P.; Falter, Harry W.; Batchelor, Clement W.; and Guarini, Michael A., to Morrison-Knudsen Company, Inc. Ignitor and enclosure structure. 4,425,495, Cl. 219-267.000.
Calabro, Max J. Device for piloting the propulsion system of a solid propellant rocket. 4,424,670, Cl. 60-231.000.
Callahan, Alfred S.; Rhodes, James S.; Johnson, Timothy L.; and Durden, John G., to Neurologics, Inc. Neurological monitoring device test circuitry. 4,424,816, Cl. 128-731.000.
Callahan, Daniel L., to Sperry Corporation. Connector removal tool. 4,424,625, Cl. 29-764.000.
Callaway, Milton A., to Simmons U.S.A. Corporation. Adjustable firmness mattress pillow top. 4,424,600, Cl. 5-470.000.
Calvo, Ricardo E.: *See*—
Bahler, David D.; and Calvo, Ricardo E., 4,425,612, Cl. 363-21.000.
Camaggi, Giovanni: *See*—
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,425,357, Cl. 424-278.000.
Campbell, Willis R.: *See*—
Eggers, Edward T.; Freimuth, John H.; Jennings, Richard E.; and Campbell, Willis R., 4,424,662, Cl. 56-341.000.
Camprincoli, Pierpaolo, to Montedison S.p.A. Fibrillated polymeric films as reinforcement in manufactured articles based on hydraulic binders. 4,425,402, Cl. 428-330.000.
Camras, Marvin, to IIT Research Institute. Record medium transducing error correction system and method. 4,425,589, Cl. 360-51.000.
Cannell, David W.; and Hawkins, Geoffrey R., to Redken Laboratories, Inc. Hair straightening compositions containing fatty acid lactylates and glycolates and their method of use. 4,424,820, Cl. 132-7.000.
Canon Denshi Kabushiki Kaisha: *See*—
Okubo, Kozo; Kobata, Yoshihiro; Asakura, Osamu; and Nishikawa, Tatsuo, 4,424,743, Cl. 101-99.000.
Canon Kabushiki Kaisha: *See*—
Hosono, Nagao; Takahashi, Tohru; Kanbe, Junichiro; Toyono, Tsutomu; Nakamura, Shunji; and Tamura, Yasuyuki, 4,425,373, Cl. 427-14.100.
Iura, Yukio; Yamamichi, Masayoshi; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashino, Yukio, 4,425,033, Cl. 354-423.000.
Kameyama, Toru; and Ichikawa, Junji, 4,425,036, Cl. 355-3.0DR.
Matsumoto, Kazuya; Yamaguchi, Isao; Tsuji, Takeo; and Sato, Hideaki, 4,425,023, Cl. 350-96.140.
Nishiyama, Keizo, 4,425,041, Cl. 365-371.000.
Okubo, Kozo; Kobata, Yoshihiro; Asakura, Osamu; and Nishikawa, Tatsuo, 4,424,743, Cl. 101-99.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,425,032, Cl. 354-458.000.
Tamura, Shuichi; Ogawa, Masahiko; Tsunekawa, Tokuichi; and Tokuda, Ryuji, 4,425,031, Cl. 354-403.000.
Canyon Corporation: *See*—
Tada, Tetsuya, 4,424,920, Cl. 222-402.110.
Caputi, Jean-Louis M.: *See*—
Colas, Claude; Herve, Guy; Caputi, Jean-Louis M.; and de Sivry, Bruno, 4,425,059, Cl. 408-1.00R.
Cardeli, Max L., to Fiber Industries, Inc. Method and apparatus for guiding filaments. 4,424,927, Cl. 226-199.000.
Cargle, Virgil H.; and Bridges, Wilbur L., to Exxon Research & Engineering Co. Method for respiratory coal dust abatement. 4,425,252, Cl. 252-88.000.
Carl Schenck AG: *See*—
Giers, Alfred; and Holdinghausen, Paul, 4,424,711, Cl. 73-462.000.
Carlin, Milton O. Animal splint. 4,424,764, Cl. 119-96.000.
Carmichael, William E.; and Rodacker, Wayne, to Carmichael, William E. Banded vehicle hub. 4,425,004, Cl. 301-8.000.
Carpenter, George K.: *See*—
Gwathney, Kenneth W.; and Carpenter, George K., 4,424,740, Cl. 100-52.000.
Carr, Charles D.: *See*—
Thyen, Eberhard; and Carr, Charles D., 4,424,898, Cl. 206-63.300.
Carr, Earl S.: *See*—
Dittmann, John F.; Morse, Elliott M.; and Carr, Earl S., 4,425,412, Cl. 429-53.000.

Carroll, Raymond J., Jr.: *See—*
Lapeyre, James M.; Svendsen, Noel A.; Lindberg, Richard S.; and Carroll, Raymond J., Jr., 4,424,686, Cl. 62-259.100.

Carson, Kent R.: *See—*
Levine, Jules D.; McKee, William R.; and Carson, Kent R., 4,425,408, Cl. 428-403.000.

Carson, Robert T.: *See—*
Gagnon, Ralph J.; and Carson, Robert T., 4,425,028, Cl. 350-337.000.

Carter, Ernest E., Jr.; and Baker, Eugene E., to Halliburton Company. Inflatable anchor element and packer employing same. 4,424,861, Cl. 166-120.000.

Carver, James L. Wheel mounting suspension strut camber correcting tool. 4,424,697, Cl. 72-309.000.

Cash, David A.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,425,500, Cl. 235-400.000.

Cason, William C.; and Kuecker, Ward A., to International Business Machines Corporation. Display support of indefinite page. 4,425,629, Cl. 364-900.000.

Casperson, John R., to Phillips Petroleum Company. Recovery of carbon black. 4,425,144, Cl. 55-96.000.

Celanese Corporation: *See—*
Christiansen, John; and Lu, Shau-zou, 4,425,457, Cl. 524-293.000.

Chan, Howard K. C., to International Standard Electric Corporation. Electrical connector including hydrophobic gel composition. 4,425,017, Cl. 339-96.000.

Chandhoke, Mohanjit S., to Harris Graphics Corporation. Mechanism for conveying articles selectively into different paths. 4,424,966, Cl. 271-302.000.

Chang, Frederic C.: *See—*
Iida, Takeshi; and Chang, Frederic C., 4,425,273, Cl. 262-397.100.

Chang, John C. H., to Wallace Computer Services, Inc. Multi-sheet assembly using autogenous coating. 4,425,386, Cl. 427-256.000.

Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, to Raychem Corporation. Marker sleeve assembly. 4,425,390, Cl. 428-43.000.

Chapin, Henry J.: *See—*
Subramanyam, Dilip K.; Chapin, Henry J.; and Heyer, Bruce A., 4,425,169, Cl. 148-137.000.

Chapman, David D.; Hoeren, Gerd H.; and Palmquist, Steven R., to Tektronix, Inc. Multi-speed logic analyzer. 4,425,643, Cl. 371-20.000.

Charamathieu, Andre G.; Dessales, Jean, deceased; by Dessales nee Vacher, Blanche A., administratrix; and Leboucq, Bernard P., to Framatome; and Societe de Travaux en Milieu Ionisant (S.T.M.I.). Process and apparatus for removal of the sludge deposits on the tube sheet of a steam generator. 4,424,769, Cl. 122-392.000.

Chazelas, Andre. Method and machine for manufacturing a multiplicity of linked filing pockets. 4,425,111, Cl. 493-918.000.

Chemische Werke Huels Aktiengesellschaft: *See—*
Beck, Rudolf; and Scholz-Weigl, Sigrid, 4,425,266, Cl. 252-548.000.

Chen, Cheug L.: *See—*
Dible, William D.; and Chen, Cheug L., 4,425,654, Cl. 372-86.000.

Cheng, Sam. Decorative lighting string for assembly with overcurrent protection. 4,425,605, Cl. 362-227.000.

Chevron Research Company: *See—*
Bryhn, Odd R.; and Loken, Tor, 4,425,165, Cl. 106-193.00R.
Bryhn, Odd R., 4,425,167, Cl. 106-287.170.
Farrell, Thomas R., 4,424,837, Cl. 141-284.000.
Goodrich, Judson E., 4,425,454, Cl. 524-69.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,425,341, Cl. 424-246.000.

Chicago Bridge & Iron Company: *See—*
Mann, Ray E., 4,425,142, Cl. 55-25.000.

Chikamasa, Hiroshi: *See—*
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, 4,424,762, Cl. 118-410.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Szantay, Csaba; Novak, Lajos; Aszodi, Jozsef; Simonidesz, Vilmos; Galambos, Geza; Kovacs, Gabor; Virag, Sandor; Stadler, Istvan; and Kormoczy, Peter, 4,425,358, Cl. 424-285.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Sumeghy, Zoltan, 4,425,349, Cl. 424-258.000.

Chouings, Leslie C. Shoe and drum brake. 4,424,888, Cl. 188-331.000.

Christiansen, John; and Lu, Shau-zou, to Celanese Corporation. High gloss polyethylene terephthalate reinforced resin compositions. 4,425,457, Cl. 524-293.000.

Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; and Varga, Sandor L., to Merck & Co., Inc. Metabolically protected analogs of neurotensin. 4,425,269, Cl. 260-112.50R.

Chrysler Corporation: *See—*
Duethman, Michael R., 4,424,890, Cl. 192-111.00A.
Kuutik, Uno, 4,424,826, Cl. 137-54.000.

Chu, James C.: *See—*
Schwartz, Paul M.; and Chu, James C., 4,425,549, Cl. 329-161.000.

Ciba-Geigy Corporation: *See—*
Bruttel, Beat; Schneider, Hansjorg; Millioud, Alain; and Rosch, Michael, 4,425,134, Cl. 8-524.000.
Lohmann, Dieter; d'Hondt, Christian; and Rist, Guenter, 4,425,361, Cl. 424-309.000.
Meyer, Willy; and Fory, Werner, 4,425,154, Cl. 71-92.000.
Pissiotas, Georg; and Rempfler, Hermann, 4,425,156, Cl. 71-94.000.
Puntener, Alois, 4,425,133, Cl. 8-437.000.
Rempfler, Hermann; and Fory, Werner, 4,425,157, Cl. 71-94.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,425,151, Cl. 71-88.000.
Wirth, Hermann O.; and Friedrich, Hans-Helmut, 4,425,278, Cl. 260-429.00R.

Cima, Louis E., to Aqua Glass Corporation. Multi-mode bath module. 4,424,598, Cl. 4-524.000.

Citizen Watch Co., Ltd.: *See—*
Mori, Yoshinobu, 4,424,611, Cl. 24-192.000.

Clabburn, Robin J. T.: *See—*
Hill, Frederick W. L.; and Clabburn, Robin J. T., 4,424,991, Cl. 285-381.000.

Clarion Co., Ltd.: *See—*
Ito, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,425,591, Cl. 360-88.000.
Watanabe, Wataru; and Kaneko, Shoji, 4,425,595, Cl. 360-137.000.

Clark, Jack: *See—*
Langman, William F.; Diener, Leslie J.; and Clark, Jack, 4,424,935, Cl. 238-349.000.

Clark, William H. Cube puzzle. 4,424,971, Cl. 273-153.00S.

Clarke, Charles D.: *See—*
Sapkus, Jurgis; Clarke, Charles D.; Lewis, J. Stephen; and Mills-Winkler, James P., 4,424,644, Cl. 46-135.00R.

Cleveland, Dixon: *See—*
Barron, Roger L.; and Cleveland, Dixon, 4,425,614, Cl. 364-158.000.

Cluett, Peabody & Co., Inc.: *See—*
Webb, Harry A.; and Lawrence, Jackson, 4,425,131, Cl. 8-115.600.

Cochran, James L.: *See—*
Bartholet, Michael A.; Cochran, James L.; Janssen, Donovan M.; Magno, Robert; Rood, Allan J.; Seaward, William S.; and Walker, Lance A., 4,424,963, Cl. 270-53.000.

Codman & Shurtleff, Inc.: *See—*
Bookwalter, John R.; and West, Alan I., 4,424,724, Cl. 74-540.000.

Cohen, Milton J. Parenteral apparatus. 4,425,122, Cl. 604-237.000.

Colas, Claude; Herve, Guy; Caputi, Jean-Louis M.; and de Sivry, Bruno, to Compagnie Francaise des Petroles. Process for removing a concrete covering. 4,425,059, Cl. 408-1.00R.

Coleman, Colin R.; King, Joseph L.; and Bridges, William J., to Babcock Power Limited. Burner control. 4,424,754, Cl. 110-190.000.

Coleman, Ronald G.; and Philbrook, Kenneth C., to General Motors Corporation. Hinged cab guard. 4,425,002, Cl. 298-1.00R.

Colgate-Palmolive Company: *See—*
Harvey, Kenneth; and Hayes, Harry, 4,425,322, Cl. 424-52.000.
Harvey, Kenneth; Connors, Stephen T.; and Baines, Eric, 4,425,324, Cl. 424-52.000.
Karami, Hamzeh, 4,425,129, Cl. 604-385.000.
Morton, Anthony J.; Harvey, Kenneth; and Gutenberg, Hermann, 4,425,323, Cl. 424-52.000.

Colineau, Joseph; and Rilly, Gerard, to Thomson-Brandt. Generator for producing a d.c. supply voltage in a television receiver comprising a vertical scanning circuit. 4,425,533, Cl. 315-408.000.

Colineau, Robert C., to Compagne Internationale pour l'Informatique Cii Honeywell Bull (Societe Anonyme). Process and apparatus for automatic positioning of a substrate on a worktable. 4,425,076, Cl. 414-781.000.

Collins, Johnny; and Hendrickson, Melvin C., to Zenith Radio Corporation. IR Remote control system. 4,425,647, Cl. 371-70.000.

Colt Industries Operating Corp: *See—*
Kindl, George F.; and Michaud, Orean E., 4,425,061, Cl. 408-16.000.
Miller, Robert J., 4,424,784, Cl. 123-438.000.

Combo Corporation: *See—*
Squires, George; and Bland, Charles, 4,424,605, Cl. 16-94.00R.

Commins, Eric J. Gas bottle carrying case. 4,424,999, Cl. 294-142.000.

Commonwealth Edison Co.: *See—*
Burkum, Merlin E.; and O'Regan, Timothy M., 4,425,541, Cl. 324-51.000.

Communication Equipment and Engineering Co.: *See—*
Lischin, Alan J., 4,425,480, Cl. 179-90.00D.

Communications Systems, Inc.: *See—*
Innes, John L., 4,424,954, Cl. 254-134.3CL.

Compagne Internationale pour l'Informatique Cii Honeywell Bull (Societe Anonyme): *See—*
Colineau, Robert C., 4,425,076, Cl. 414-781.000.

Compagnie de Construction Mecanique Sulzer: *See—*
Kaegi, Jacob; and Leroy, Daniel, 4,425,088, Cl. 418-147.000.

Compagnie Francaise Des Petroles: *See—*
Blondy, Rene; and Crohas, Henri, 4,425,054, Cl. 405-211.000.
Colas, Claude; Herve, Guy; Caputi, Jean-Louis M ; and de Sivry, Bruno, 4,425,059, Cl. 408-1.00R.
Munari, Georges J.; and Perineau, Serge M., 4,424,862, Cl. 166-168.000.

Concannon, Joseph N. Biological control. 4,425,331, Cl. 424-93.000.

Concannon, Thomas P.; and Rummel, Mitzie K., to Du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene resin with degradation retarder. 4,425,448, Cl. 523-218.000.

Connors, Stephen T.: *See—*
Harvey, Kenneth; Connors, Stephen T.; and Baines, Eric, 4,425,324, Cl. 424-52.000.

Conoco Inc.: *See—*
Hunter, Andrew F., 4,425,056, Cl. 405-224.000.
Jacocks, Claud L.; LaFleur, Robbie J.; and Grimsley, Ralph L., 4,425,239, Cl. 210-787.000.

Logan, Charles S., 4,424,864, Cl. 166-278.000.
Lovercheck, Dale R., 4,424,771, Cl. 123-3.000.
Conrad, Rene A. Positive drive system. 4,424,619, Cl. 29-527.400.
Conradty, Claudio: *See—*
Bauer, Hanns G.; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,425,657, Cl. 373-93.000.
Consumers' Gas Company Limited: *See—*
Cowx, Douglas B., 4,424,988, Cl. 285-2.000.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, 4,424,846, Cl. 152-209.00R.
Contraves AG: *See—*
Schmidt, Walter, 4,425,030, Cl. 350-339.00R.
Conzelmann, Gerhard: *See—*
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,424,614, Cl. 28-255.000.
Cook, Rodney G. Binary animal trap. 4,424,640, Cl. 43-58.000.
Cooper, Barry A., to Bemis Company, Inc. Polymer blend composition for stretch wrap film. 4,425,268, Cl. 524-110.000.
Cooper, Hal B. H. Removal and recovery of nitrogen and sulfur oxides from gaseous mixtures containing them. 4,425,313, Cl. 423-235.000.
Cooper Industries, Inc.: *See—*
Lovrenich, Rodger T., 4,424,931, Cl. 228-180.00R.
Ward, Robert E.; Lasley, James A.; and Young, John C., 4,425,475, Cl. 174-117.00F.
Wilhelmson, Jack L., 4,424,930, Cl. 228-20.000.
Cooperrider, Myron T., to R. W. Beckett Corporation. Power gas burner. 4,424,793, Cl. 126-110.00B.
COP, Inc.: *See—*
Hillberg, Robert L., 4,424,638, Cl. 42-69.00R.
Copal Company Limited: *See—*
Nakamura, Shigekazu, 4,425,557, Cl. 338-32.00H.
Cordis Corporation: *See—*
Lesnick, Alan F., 4,424,812, Cl. 128-419.0PG.
Cornell Research Foundation, Inc.: *See—*
Norcross, Neil L.; and Opdebeeck, Johanna P., 4,425,330, Cl. 424-92.000.
Cornell, William D.; and Joslin, Joel, to Sherwood Medical Company. Blood collection device with phase partitioning means. 4,425,235, Cl. 210-516.000.
Corning Glass Works: *See—*
Smith, Rex L., 4,425,042, Cl. 356-375.000.
Corporation For Public Broadcasting: *See—*
Schweppe, Darrell L.; and Siegl, Hermann K., 4,425,581, Cl. 358-148.000.
Corsette, Douglas F.: *See—*
Knox, Donald E.; Corsette, Douglas F.; and Meyer, Ronald A., 4,424,919, Cl. 222-153.000.
Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
Mussi, Fiorenzo; and Pariani, Emilio, 4,425,082, Cl. 416-61.000.
Cottis, Robert A.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,425,500, Cl. 235-400.000.
Coulter, James H.; and Lindsey, David L., to Coulter-Mustang Services Company. Method for cleaning and coating pipeline walls. 4,425,385, Cl. 427-238.000.
Coulter-Mustang Services Company: *See—*
Coulter, James H.; and Lindsey, David L., 4,425,385, Cl. 427-238.000.
Courson, Iber C., to Westinghouse Electric Corp. Indirect light-distributing ceiling fixtures with alternate reflector array. 4,425,603, Cl. 362-222.000.
Cowx, Douglas B., to Consumers' Gas Company Limited. Frangible pipe coupling. 4,424,988, Cl. 285-2.000.
Crane Co.: *See—*
Skarvada, Thomas, 4,425,621, Cl. 364-426.000.
Crawford, Richard R.; Blum, William P.; and Naramore, David C., to Eastman Kodak Company. Process for separating 3-hydroxy steroids or sterols from mixtures such as lipids. 4,425,275, Cl. 260-397.250.
Creatura, John A., to Xerox Corporation. Process for oxidation of carrier particles. 4,425,383, Cl. 427-216.000.
Creusot-Loire Enterprises: *See—*
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Paliard, Maurice, 4,425,163, Cl. 106-100.000.
Cristaleria, S.A.: *See—*
Rumayor-Aguirre, Hugo; Gomez-Sanchez, Abel; and Viramontes-Romo, Jesus, 4,424,925, Cl. 225-2.000.
Crohas, Henri: *See—*
Blondy, Rene; and Crohas, Henri, 4,425,054, Cl. 405-211.000.
Cronin, Dennis C., to Beloit Corporation. Extended nip shoe for a nip in a papermaking machine. 4,425,190, Cl. 162-358.000.
Crystal, Richard G., to Xerox Corporation. Print wheel for use with an alignment print hammer. 4,425,045, Cl. 400-144.200.
Cunningham, Robert J.; and Orvos, Peter S., to Timken Company, The. Polymer cage for a high speed tapered roller bearing. 4,425,011, Cl. 308-214.000.
Curtil, Remi, to Societe d'Etudes de Machines Thermiques, S.E.M.T. Method of improving the efficiency of a supercharged diesel engine. 4,424,790, Cl. 123-559.000.
Cushman Industries, Incorporated: *See—*
Pruden, Samuel H.; and Kunz, James B., 4,424,977, Cl. 279-121.000.
Cutler, Leonard S., to Hewlett-Packard Company. Atomic beam device using optical pumping. 4,425,653, Cl. 372-70.000.
Cutler, Scott E.: *See—*
Bedard, James F.; Cutler, Scott E.; Eichelberger, Charles W.; Miller, Edward B.; and Nati, Salvatore F., Jr., 4,425,628, Cl. 364-900.000.
Dammann, Peter: *See—*
Bauer, Karl; Schippers, Heinz; and Dammann, Peter, 4,424,664, Cl. 57-338.000.
Dan, Takuya; and Fujita, Akio, to Bridgestone Tire Company Limited. Rubber vibration isolators. 4,424,960, Cl. 267-8.00R.
Danfoss A/S: *See—*
Hansen, Henning M., 4,424,715, Cl. 73-861.280.
Dasek, Jaroslav: *See—*
Sozzi, Tomaso; Buhler, Marcel E. A.; and Dasek, Jaroslav, 4,425,366, Cl. 426-43.000.
Data General Corporation: *See—*
Seligman, Lawrence; and Perron, Ralph A., 4,425,625, Cl. 364-900.000.
Dataproducts Corporation: *See—*
Van Horne, Arthur C.; and Branson, Terry L., 4,425,046, Cl. 400-208.000.
Davies, Harry: *See—*
Johnstone, Gregg M.; and Davies, Harry, 4,425,590, Cl. 360-71.000.
Davis, Kirk E., to Lubrizol Corporation, The. Two-cycle fuel compositions containing amino phenols. 4,425,138, Cl. 44-58.000.
Davis, Robert H.: *See—*
Piotrowski, Alfred B.; and Davis, Robert H., 4,425,248, Cl. 252-49.300.
Davitz, Walter E., to Production Plus Corporation. Custom changeable, knockdown shelf. 4,424,908, Cl. 211-118.000.
Dawson, Charles W.: *See—*
Parmet, Arthur A.; and Dawson, Charles W., 4,425,626, Cl. 364-900.000.
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Dayco Corporation: *See—*
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Deacon, David W., to Paccar Inc. Adjustable steering column. 4,424,721, Cl. 74-493.000.
Deal, Samuel B.; and Bartch, Donald W., to RCA Corporation. Method of making a cathode-ray tube having a conductive internal coating exhibiting reduced arcing current. 4,425,377, Cl. 427-64.000.
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De Jaeger, Antoine A.; De Lamper, Gina C.; Poot, Albert L.; and Wagemans, Albert P., to Agfa-Gevaert N.V. Production of a planographic printing plate through the silver complex diffusion transfer process. 4,425,420, Cl. 430-204.000.
de Jong, Joannes N. M.; Earle, Richard L.; and Nardi, Anthony P., to Sperry Corporation. Turboflapper nozzle systems. 4,425,509, Cl. 290-40.00C.
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Dible, William D.; and Chen, Cheug L., to United States of America, Army. Ultraviolet preionizer for high power laser. 4,425,654, Cl. 372-86.000.
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Donahue, Robert. Stairway lighting system. 4,425,601, Cl. 362-146.000.
Doring, Erich. Sound-illustrated, bound book. 4,425,098, Cl. 434-317.000.
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Down River International, Inc.: *See*—
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Doyen, Jean; Morel, Philippe; and Resneau, Jean C., to Thomson-CSF. Base for encapsulating components with coplanar electrodes. 4,425,575, Cl. 357-81.000.
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Dragone, Corrado, to Bell Telephone Laboratories, Incorporated. Antenna arrangement for providing a frequency independent field distribution with a small feedhorn. 4,425,566, Cl. 343-781.00P.
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Kestner, Daniel W., Jr., 4,425,220, Cl. 208-11.00R.
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Dudley, Russell D.; Areaux, Larry D.; and Dudley, Robert H., to Reclamet, Inc. Equipment for reclaiming the waste products of machining. 4,424,891, Cl. 193-2.00R.
Duethman, Michael R., to Chrysler Corporation. Manual clutch wear adjuster. 4,424,890, Cl. 192-111.00A.
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Dunbar, Glenn G. Apparatus for loading and unloading cargo from a trailer. 4,425,071, Cl. 414-542.000.
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Concannon, Thomas P.; and Rummel, Mitzie K., 4,425,448, Cl. 523-218.000.
DeVries, Frederick W., 4,425,307, Cl. 423-20.000.
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Durand, Francois. Fluid-pressure actuated coupling. 4,425,050, Cl. 403-15.000.
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Durr, Helmut E.; and Heard, Charles B., Jr., to Western Electric Company, Inc. Pulp-insulated conductor cable. 4,425,474, Cl. 174-110.00F.
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le Fur, Daniel; Haug, Robert; and Goldman, Max, 4,425,496, Cl. 219-384.000.
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Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., to United States of America, Navy. FEL Gain enhancement effect by a static transverse magnetic field with a longitudinal gradient. 4,425,649, Cl. 372-2.000.
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Elliott, Guy R. B.; Barraclough, Bruce L.; and Vanderborgh, Nicholas E., to United States of America, Energy. Apparatus for recovering gaseous hydrocarbons from hydrocarbon-containing solid hydrates. 4,424,858, Cl. 166-52.000.
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Pennington, Charles E., 4,424,626, Cl. 29-839.000.
Emmerich, Hubert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Shut-off device for a self-igniting internal combustion engine. 4,424,782, Cl. 123-367.000.
Emmons, William D.; and Stevens, Travis E., to Rohm and Haas Company. Polyacrylamide flow modifier-adsorber. 4,425,469, Cl. 524-750.000.
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Peterson, Daniel G.; and Erickson, John W., 4,425,086, Cl. 417-388.000.
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Everest, David C., to Lange International S.A. Buckle fastener, notably for sports footwear. 4,424,636, Cl. 36-50.000.
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Makowski, Henry S., deceased; Lundberg, Robert D.; and Agarwal, Pawan K., 4,425,460, Cl. 525-380.000.
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Turner, S. Richard; Lundberg, Robert D.; Thaler, Warren A.; Walker, Thad O.; and Peiffer, Dennis G., 4,425,461, Cl. 524-400.000.
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Fanning, Arthur E. Apparatus for increasing the efficiency of a gas turbine engine. 4,424,667, Cl. 60-39.181.
Fanning, William J.; Nichele, Peter J.; and Pratali, Roger P., to Western Electric Company, Inc. Method and apparatus for boxing and encapsulating electrical devices. 4,424,617, Cl. 29-25.420.
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Horn, Walter, 4,424,915, Cl. 220-316.000.
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Byrne, Andrew T., 4,424,736, Cl. 89-36.00D.
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Best, Walter E.; and Foshee, William R., 4,424,693, Cl. 70-369.000.
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French, Joseph A.; Maddern, Thomas S.; and Philip, Alexander S., to Plessey Company plc, The. Time division multiplex telecommunication digital switching modules. 4,425,641, Cl. 370-64.000.
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Kikuchi, Yoshiki; and Murayama, Tomio, 4,424,964, Cl. 271-91.000.
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Fukukura, Kazutoyo, to AMP Incorporated. Encoded keyboard switch. 4,425,484, Cl. 200-5.00A.
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Fujii, Setsuro; Yasui, Bompei; Nakamura, Mitsuo; Hirohashi, Mitsuru; Miyamoto, Tomohisa; Ando, Kazuko; Hashimoto, Iwao; Umeda, Naoki; and Kawasaki, Masahiro, 4,425,335, Cl. 424-180.000.
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Gagliani, John; and Long, John V. Closed cell polyimide foams and methods of making same. 4,425,441, Cl. 521-56.000.
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Galasso, Francis S.; and Veltri, Richard D., to United Technologies Corporation. CVD SiC pretreatment for carbon-carbon composites. 4,425,407, Cl. 428-368.000.
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Galbraith, Peter A., to Galbraith Engineering Pty. Ltd. Variable speed epicyclic transmission devices. 4,424,726, Cl. 74-796.000.
Gallaway, Bob M. Restoring skid friction to worn pavement surfaces. 4,425,051, Cl. 404-72.000.
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Adamowski, Andre; Gallet, Gerard; Lhermitte, Jacques; Monne, Maxime; and Vautherot, Guy, 4,425,296, Cl. 376-245.000.
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Garcia, Dana S., to Du Pont de Nemours, E. I., and Company. Alkali metal salts of low molecular weight polyethylene terephthalate as nucleating agents for polyethylene terephthalates. 4,425,470, Cl. 525-444.000.
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Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,425,357, Cl. 424-278.000.
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GCA Corporation: *See*—
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Geist, Wayne R.: *See*—
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Rosenberry, George M., Jr.; Mallick, John A.; and Richter, Eike, 4,425,521, Cl. 310-214.000.
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Shanks, Bruce E., 4,425,607, Cl. 362-267.000.
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Smith, Lowell S.; Brisken, Axel F.; and Horner, Michael S., 4,425,525, Cl. 310-336.000.
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Kotwicki, Allan J., 4,424,783, Cl. 123-418.000.
Millington, Donald L.; and Nyquist, Gerald A., 4,424,829, Cl. 137-590.000.
Miska, Fred S.; and Duddles, James A., 4,424,682, Cl. 62-133.000.
Oh, Hilario L., 4,424,706, Cl. 73-35.000.
Steele, Robert E., 4,425,564, Cl. 340-825.790.
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Gili Bas, Francisco J. Drum apparatus for the treatment of hides, leathers and the like. 4,424,690, Cl. 69-30.000.
Gillet, Guy, to Supermarket Systems. Method and installation for encouraging the restitution of shopping carts in a supermarket. 4,424,893, Cl. 194-4.00C.
Glennon, Thomas F., to Eation Corporation. Method and device for providing dwell in timer controlled appliances. 4,425,513, Cl. 307-141.400.
GNB Batteries Inc.: *See*—
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Gockel, Don A. Portable hand control apparatus. 4,424,723, Cl. 74-482.000.
Godfroid, Jean-Jacques; and Thuillier, Jean, to Agence Nationale de Valorisation de la Recherche. Substituted phenoxyacetates of cyclic amines. 4,425,352, Cl. 424-267.000.
Golden, Michael D.: *See*—
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le Fur, Daniel; Haug, Robert; and Goldman, Max, 4,425,496, Cl. 219-384.000.
Goldstein, Sherwood; McClelland, Henry T.; and Scherbner, Paul J., to Cabot Corporation. Copper beryllium alloy and the manufacture thereof. 4,425,168, Cl. 148-2.000.
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Goodrich, Judson E., to Chevron Research Company. Asphalt/ethylene-vinyl acetate copolymer composition for air-blowing. 4,425,454, Cl. 524-69.000.
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Gore, Dennis L.; and Patterson, Dennis H., to San Electric Corporation. Positioning pin assembly for a tire changing machine. 4,424,848, Cl. 157-1.280.
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Gotoh, Yoshihisa: *See*—
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Gougoulas, Harry. Tire spray cleaning system. 4,424,823, Cl. 134-45.000.
Gould, Deryk S. M., to Northern Engineering Industries. Pressure equalizing device and deep well motor/pump combination. 4,425,087, Cl. 417-414.000.

Gozzo, Franco: *See*—
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Graf, Werner; Frey, Volker; and Rose, Hans-Gunter, to Wacker-Chemie GmbH. Method for preparing solid objects. 4,425,387, Cl. 427-341.000.

Granlind, Ingmar; and Bodin, Ove. Truck. 4,424,872, Cl. 180-24.020.

Grant, Louis A.; and Trunzo, Arthur F., to Standard Steel Sponge, Inc. Drapable, consumable, heat retention shield for hot metal cars. 4,424,956, Cl. 266-248.000.

Grant, Louis A.; and Trunzo, Arthur F., to Standard Steel Sponge, Inc. Hot metal car heat retention shield. 4,424,957, Cl. 266-248.000.

Grant, Ralph M., to Industrial Holographics, Inc. Apparatus for the practice of double exposure interferometric non-destructive testing. 4,425,039, Cl. 356-35.500.

Graves, Frederic A., to Land O'Lakes, Inc. Process for making margarine-type food product. 4,425,370, Cl. 426-603.000.

Gray, Thomas J., to Olin Corporation. Hydrogen evolution cathode. 4,425,203, Cl. 204-129.000.

Green Cross Corporation, The: *See*—
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Green, Harold A.; Weinstein, Morris; and Prodo, Kenneth W., to Millmaster Onyx Group, Inc. Foaming agents for use in drilling for oil and gas. 4,425,243, Cl. 252-8.50C.

Green Mountain Products, Inc.: *See*—
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Grendon, William C., to Weyerhaeuser Company. Resin hardener and method for its use. 4,425,178, Cl. 156-307.300.

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Grindle, James L., to General Electric Company. Fixture for hazardous area. 4,425,609, Cl. 362-373.000.

Groen, Harm J.: *See*—
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Sichel, Enid K., 4,425,527, Cl. 313-112.000.

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Penny, Glenn S.; and Briscoe, James E., 4,425,242, Cl. 252-8.55R.

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Hamada, Masato; Ohmura, Jukichi; and Muranaka, Fumio, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of (ω-fluorosulfonyl)-haloaliphatic carboxylic acid fluorides. 4,425,199, Cl. 204-59.00F.

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Krubsack, Larry J.; and Volk, Thomas G., 4,425,610, Cl. 362-419.000.
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le Fur, Daniel; Haug, Robert; and Goldman, Max, 4,425,496, Cl. 219-384.000.
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Horvath, Stanley K., to Ford Motor Company. Paint composition comprising hydroxy functional film former and improved stable flow control additive. 4,425,450, Cl. 523-334.000.
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Oikawa, Naoyuki; Sato, Wako; and Tanaka, Osamu, 4,425,392, Cl. 428-90.000.

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Abe, Tsutomu; Akao, Tsutae; and Ikeda, Akihiko, 4,425,237, Cl. 210-692.000.

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Sasaki, Toshihiro; Ikehata, Hiromi; and Fukumoto, Ryoichi, 4,424,647, Cl. 49-502.000.

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Sugiyama, Masatoshi; Adachi, Keiichi; Kato, Eiichi; Ogawa, Akira; and Imai, Shinichi, 4,425,162, Cl. 106-22.000.

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Kamohara, Hideaki; Imamura, Minoru; Higaki, Hiroshi; Yoshitomi, Yuji; Uno, Syuzo; Makino, Kazuhiro; and Nomura, Hiroshi, 4,425,048, Cl. 403-191.000.

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Padget, John C.; McAloon, Kevin T.; and Burgess, Anthony J., 4,425,465, Cl. 524-450.000.

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Peppers, Henry J., 4,424,699, Cl. 72-388.000.

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Smith, Max D., 4,424,968, Cl. 273-1.50R.

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Grant, Ralph M., 4,425,039, Cl. 356-35.500.

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Inoue, Kiyoshi, 4,425,197, Cl. 204-25.000.

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Adamowski, Andre; Gallet, Gerard; Lhermitte, Jacques; Monne, Maxime; and Vautherot, Guy, 4,425,296, Cl. 376-245.000.

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Abbas, Shakir A.; and Magdo, Ingrid E., 4,424,621, Cl. 29-571.000.
Bahler, David D.; and Calvo, Ricardo E., 4,425,612, Cl. 363-21.000.
Bartholet, Michael A.; Cochran, James L.; Janssen, Donovan M.; Magno, Robert; Rood, Allan J.; Seaward, William S.; and Walker, Lance A., 4,424,963, Cl. 270-53.000.
Cason, William C.; and Kuecker, Ward A., 4,425,629, Cl. 364-900.000.
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Boden, Richard M.; and Tyszkiewicz, Theodore J., 4,425,264, Cl. 252-522.00R.
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Sorensen, Robert; Barrett, Edward A.; and Scarnato, Thomas J., 4,425,058, Cl. 406-100.000.

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Chan, Howard K. C., 4,425,017, Cl. 339-96.000.

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Shelby, Billy L.; and Moore, William C., 4,424,993, Cl. 292-128.000.

InterNorth, Inc.: *See*—
Busse, Paul J., 4,425,439, Cl. 502-25.000.

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Terlaak, Daniel J., 4,424,873, Cl. 180-65.00E.

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Hahn, John A., 4,425,057, Cl. 405-258.000.

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Tomooka, Keiji; Ogawa, Makoto; and Ishiguro, Hideo, 4,425,512, Cl. 307-138.000.

Ishii, Takahiko: *See*—
Asari, Akira; Noyori, Tatsuhiko; Ueda, Masakazu; and Ishii, Takahiko, 4,424,696, Cl. 72-273.500.

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Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, 4,425,636, Cl. 369-44.000.

Ito, Yoichiro, to United States of America, Health and Human Services. Flow-through centrifuge. 4,425,112, Cl. 494-18.000.

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Meguro, Takeshi; and Ito, Yukio, 4,425,555, Cl. 333-202.000.

ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,425,631, Cl. 365-185.000.
Frigger, Heinz; and Hoffmann, Rainer, 4,424,886, Cl. 188-73.350.

Iura, Yukio; Yamamichi, Masayoshi; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashino, Yukio, to Canon Kabushiki Kaisha. Camera employing a flash illumination device and a flash photographing system. 4,425,033, Cl. 354-423.000.

IVAC Corporation: *See*—
Bucchianeri, Richard M., 4,424,720, Cl. 74-89.150.

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Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,425,035, Cl. 355-3.0CH.

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Izawa, Tatsuo; Mori, Hidefumi; Shimizu, Nobuo; and Murakami, Yasuji, to Nippon Telegraph & Telephone Public Corporation.

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Blepp, Martin, 4,425,014, Cl. 312-284.000.

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Holmes, Terry M., 4,424,985, Cl. 280-766.100.

Jackson, Eric A.; and Turner, George M., to Perard Engineering Ltd. Rack and pinion drive arrangement. 4,424,722, Cl. 74-422.000.

Jackson, Lauren M., to Kendall Company, The. Therapeutic stocking structure. 4,424,596, Cl. 2-240.000.

Jackson, Milan D., to U-Dig-It Enterprises, Inc. Foldable digging tool. 4,424,997, Cl. 294-53.500.

Jacobine, Anthony F., to Upjohn Company, The. Compositions and process. 4,425,208, Cl. 204-159.150.

Jacobs, Fritz E.: *See*—
Vernon, Lonnie W.; Jacobs, Fritz E.; and Bauman, Richard F., 4,425,224, Cl. 208-56.000.

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Jacocks, Claud L.; LaFleur, Robbie J.; and Grimsley, Ralph L., to Conoco Inc. Method and apparatus for oil-water separation. 4,425,239, Cl. 210-787.000.

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James, Michael H., to Beecham Group Limited. Antacid composition. 4,425,332, Cl. 424-94.000.

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Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; and Wada, Tomio, 4,425,572, Cl. 357-4.000.

Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, to Bayer Aktiengesellschaft. Preparation of 3-(arylvinyl)-2,2-dimethyl-cyclopropane-1-carboxylic acid esters and new intermediate therefor. 4,425,282, Cl. 260-465.00D.

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Strobel, Gary A.; Gavlak, Andrea H.; and Jaynes, Jesse M., 4,425,150, Cl. 71-77.000.

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Berney, Jean-Claude, 4,425,538, Cl. 318-696.000.

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Jenkins, William A., to Monarch Marking Systems, Inc. Web of tags and method of attaching tags. 4,425,394, Cl. 428-136.000.

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Eggers, Edward T.; Freimuth, John H.; Jennings, Richard E.; and Campbell, Willis R., 4,424,662, Cl. 56-341.000.

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Thorn, Joseph H.; and Jennings, Robert E., 4,424,761, Cl. 118-300.000.

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Butterworth, George A. M.; Elias, Robert T.; Miller, Wayne D.; and Shepherd, Robert C., 4,425,126, Cl. 604-366.000.

Johnson, Michael G. Plunging water jets for oil spill containment and recovery. 4,425,240, Cl. 210-801.000.

Johnson, Robert M., to Green Mountain Products, Inc. Citrus pulp litter for pet animals. 4,424,763, Cl. 119-1.000.

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Callahan, Alfred S.; Rhodes, James S.; Johnson, Timothy L.; and Durden, John G., 4,424,816, Cl. 128-731.000.

Johnston, Malcolm. Spherical spring mounting. 4,424,962, Cl. 267-140.200.

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Jones, Cynthia: *See*—
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Jones, Robert W. Highway hazard warning sign signal. 4,425,560, Cl. 340-74.000.

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Cornell, William D.; and Joslin, Joel, 4,425,235, Cl. 210-516.000.

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Schafer, Ewald; and Jung, Harald, 4,424,808, Cl. 128-156.000.

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Ezawa, Sadaaki, 4,424,730, Cl. 84-1.010.

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Asari, Akira; Noyori, Tatsuhiko; Ueda, Masakazu; and Ishii, Takahiko, 4,424,696, Cl. 72-273.500.
Kawamura, Teruaki; Nishimura, Tadashi; Akagi, Kazuo; and Shitamatsu, Ryujiro, 4,425,062, Cl. 408-28.000.

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Endo, Hisashi, 4,424,737, Cl. 91-396.000.
Yamashita, Hisateru, 4,424,742, Cl. 100-229.00R.

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Mito, Ikuo; Kitamura, Mitsuhiro; Kaede, Kazuhisa; and Kobayashi, Kohroh, 4,425,650, Cl. 372-46.000.

Kaegi, Jacob; and Leroy, Daniel, to Compagnie de Construction Mecanique Sulzer. Vane-stator bottom assembly for rotary hydraulic devices. 4,425,088, Cl. 418-147.000.

Kage, Kouzou, to Nippon Electric Company, Ltd. Digital signal processing circuit. 4,425,548, Cl. 328-162.000.

Kagi, Bruno; Hirmann, Georg; and Luginbuhl, Rolf, to Bachofen AG. Device for detachably coupling the orifice of a branchline to a line carrying a pressure medium. 4,424,827, Cl. 137-320.000.

Kalhorn, George P., to Deere & Company. Hydraulic power steering system. 4,424,672, Cl. 60-385.000.

Kalin, August: *See*—
Laverty, Gerald; Kalin, August; and Seyffert, Michael, 4,425,213, Cl. 204-202.000.

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Tsubakihara, Osamu; Kameyama, Kazuhide; Takahama, Hideyuki; Sakai, Kuniaki; and Tsuneoka, Akira, 4,424,855, Cl. 164-485.000.

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Enomoto, Masayuki; and Kanai, Kiyoshi, 4,425,494, Cl. 219-216.000.

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Kanbe, Junichiro: *See*—
Hosono, Nagao; Takahashi, Tohru; Kanbe, Junichiro; Toyono, Tsutomu; Nakamura, Shunji; and Tamura, Yasuyuki, 4,425,373, Cl. 427-14.100.

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Kanotz, William M., to Western Electric Company, Inc. Hybrid extrusion methods. 4,425,292, Cl. 264-174.000.

Kanto Kasei Co., Ltd.: *See*—
Honma, Hideo; Suzuki, Yoshiaki; and Matsumoto, Yasuhiro, 4,425,205, Cl. 204-151.000.

Kao Soap Co., Ltd.: *See*—
Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, 4,425,329, Cl. 424-70.000.

Kaplan, Murray A.; Bouzard, Daniel; Perol, Claude; Stemer, Jacques; and Weber, Abraham, to Bristol-Myers Company. Antitumor compositions. 4,425,348, Cl. 424-257.000.

Karami, Hamzeh, to Colgate-Palmolive Company. Diaper with cushioned elastic leg hold edges. 4,425,129, Cl. 604-385.000.

Karl Otto Braun KG: *See*—
Schafer, Ewald; and Jung, Harald, 4,424,808, Cl. 128-156.000.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,424,978, Cl. 280-1.130.

Kassai, Kenzou, to Kassai Kabushikikaisha. Vehicle for children. 4,424,978, Cl. 280-1.130.

Kataoka, Takashi: *See*—
Shibahashi, Yutaka; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Kito, Tsutomu, 4,425,161, Cl. 106-21.000.

Kato, Eiichi: *See*—
Sugiyama, Masatoshi; Adachi, Keiichi; Kato, Eiichi; Ogawa, Akira; and Imai, Shinichi, 4,425,162, Cl. 106-22.000.

Kato, Kiichi: *See*—
Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, 4,425,636, Cl. 369-44.000.

Kato, Tadao: *See*—
Sato, Koji; Kato, Tadao; and Kawano, Hikaru, 4,424,660, Cl. 53-540.000.

Katoh Electrical Machinery Co. Ltd.: *See*—
Sorimachi, Akira, 4,424,606, Cl. 16-223.000.

Kaus, Malcolm J.: *See*—
Miro, Nemesio D.; and Kaus, Malcolm J., 4,425,257, Cl. 502-154.000.

Kawai, Yoichi; Nakamura, Yoshiro; Gotoh, Yoshihisa; Maki, Masami; Yokote, Sachio; and Sekiguchi, Katsumi, to Mitsui Toatsu Chemicals, Inc. Electroconductive resin composition. 4,425,262, Cl. 252-511.000.

Kawamoto, Fumiaki; Tanaka, Shozo; and Honma, Yoshihiro, to Shin-Etsu Vinyl Acetate Co., Ltd. Method for the preparation of alkenyl esters of carboxylic acids. 4,425,277, Cl. 260-410.90N.

Kawamura, Teruaki; Nishimura, Tadashi; Akagi, Kazuo; and Shitamatsu, Ryujiro, to Kabushiki Kaisha Kobe Seiko Sho. Cutting and chamfering apparatus for opposing ends of tubular material. 4,425,062, Cl. 408-28.000.

Kawamura, Yasuo: *See*—
Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Sato, Jun; Ozawa, Kiyomi; Hirose, Masayoshi; and Hirata, Kiminori, 4,425,343, Cl. 424-250.000.

Kawanishi, Toshiyuki; and Tabata, Yukio, to Ricoh Company, Ltd. Non-impact recording method and apparatus. 4,425,569, Cl. 346-76.0PH.

Kawano, Hikaru: *See*—
Sato, Koji; Kato, Tadao; and Kawano, Hikaru, 4,424,660, Cl. 53-540.000.

Kawano, Junichi: *See*—
Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, 4,425,329, Cl. 424-70.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Takagi, Izumi, 4,424,979, Cl. 280-21.00R.

Kawasaki, Katsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Oscillating link mechanism for three-wheeled motor vehicles. 4,424,877, Cl. 180-210.000.

Kawasaki, Masahiro: *See*—
Fujii, Setsuro; Yasui, Bompei; Nakamura, Mitsuo; Hirohashi, Mitsuru; Miyamoto, Tomohisa; Ando, Kazuko; Hashimoto, Iwao; Umeda, Naoki; and Kawasaki, Masahiro, 4,425,335, Cl. 424-180.000.

Kawasugi, Tadaaki: *See*—
Fujimoto, Tadao; and Kawasugi, Tadaaki, 4,425,231, Cl. 210-96.100.

Kawata, Masayuki; and Yoshii, Shinichi, to Toyo Kogyo Co., Ltd. Catalytic converter. 4,425,304, Cl. 422-171.000.

KCP Bandage, Inc.: *See*—
Yovankin, Robert A., 4,424 809, Cl. 128-165.000.

Keck, Paul, Jr. Fire hose donut roll carrier. 4,425,000, Cl. 294-165.000.

Kedem, Tuval, to Equipment Company of America. Brake assembly for pallet lift truck. 4,424,885, Cl. 188-22.000.

Keen, Cletus F. Garment hanger caddy. 4,424,905, Cl. 211-49.00R.

Keil, Rudolf; and Auracher, Franz, to Siemens Aktiengesellschaft. Planar electro-optical light deflector for several beam positions. 4,425,024, Cl. 350-96.140.

Keisuke Honda: *See*—
Yamamoto, Shigeo; and Kobayashi, Kazuto, 4,425,635, Cl. 367-125.000.

Kendall Company, The: *See*—
Jackson, Lauren M., 4,424,596, Cl. 2-240.000.

Kenez, Erno: *See*—
Hecker, Gyula; Kenez, Erno; Nyari, Laszlo; and Patta, Janos, 4,425,608, Cl. 362-291.000.

Kennedy, Richard L., to Teledyne Industries, Inc. Process and apparatus for producing powdered metal. 4,425,286, Cl. 264-8.000.

Kenton, Joseph R.: *See*—
Reusser, Robert E.; Kenton, Joseph R.; and Todd, Elizabeth A., 4,425,226, Cl. 208-307.000.

Kernforschungsanlage Julich GmbH: *See*—
Knieper, Josef; Printz, Heinz; and Wolfle, Robert, 4,424,903, Cl. 206-525.000.

Kernon, John D.: *See*—
Speak, Trevor H.; Kernon, John D.; and Roberts, Derek A., 4,425,079, Cl. 415-139.000.

Kerr, Paul R.: *See*—
Makhlouf, Joseph M.; McCollum, Gregory J.; and Kerr, Paul R., 4,425,468, Cl. 524-710.000.

Kerridge, Norman A.: *See*—
Stanton, William A.; Hazlewood, Jonathan; and Kerridge, Norman A., 4,425,080, Cl. 415-197.000.

Kestner, Daniel W., Jr., to Dravo Corporation. Method of and apparatus for processing of oil shale. 4,425,220, Cl. 208-11.00R.

Key Pharmaceuticals, Inc.: *See*—
Tuttle, Ronald R., 4,425,336, Cl. 424-180.000.

Khandros, Igor Y.; and Heyer, Bruce A., to Abex Corporation. Foundry practices. 4,424,853, Cl. 164-57.100.

Kikuchi, Kenichi: *See*—
Shiratori, Harunori; Kikuchi, Kenichi; and Moriya, Yoshikazu, 4,424,984, Cl. 280-661.000.

Kikuchi, Toshio: *See*—
Onoda, Susumu; Kitamura, Haruo; and Kikuchi, Toshio, 4,424,856, Cl. 164-504.000.

Kikuchi, Yoshiki; and Murayama, Tomio, to Fuji Xerox Co., Ltd. Paper transportation control system. 4,424,964, Cl. 271-91.000.

Kikuchi, Yoshiki: *See*—
Moriguchi, Fujio; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,425,568, Cl. 346-76.0PH.

Killen, Robert H., to Pacific Furniture Manufacturing Co. Apparatus for locking cabinet drawers. 4,425,013, Cl. 312-216.000.

Kim, Chul H.: *See*—
Lee, Hyong; and Kim, Chul H., 4,424,651, Cl. 52-175.000.

Kim, Vladimir A.: *See*—
Samokhvalov, Jury I.; Kim, Vladimir A.; and Golovkin, Engels K., 4,425,180, Cl. 156-415.000.

Kimball International, Inc.: *See*—
Howell, Stephen L., 4,424,731, Cl. 84-1.260.

Kimberly-Clark Corporation: *See*—
Frick, Richard H., 4,425,173, Cl. 156-204.000.

Kimbro, William S. Method of making a dry compound containing chelated micronutrients and the chelating agent used to form the compound. 4,425,149, Cl. 71-24.000.

Kimmett, James P.; and Geise, Leo, to Kimmett, James P. Paint tray support. 4,424,949, Cl. 248-238.000.

Kincaid, John: *See*—
Tsaliovich, Anatoly; and Kincaid, John, 4,425,542, Cl. 324-58.00R.

Kindl, George F.; and Michaud, Orean E., to Colt Industries Operating Corp. Tool setting device for machining center. 4,425,061, Cl. 408-16.000.

King, Donald D.: *See*—
Waldschmidt, William L.; and King, Donald D., 4,424,684, Cl. 62-239.000.

King, Joseph L.: *See*—
Coleman, Colin R.; King, Joseph L.; and Bridges, William J., 4,424,754, Cl. 110-190.000.

Kinoshita, Kiyoshi; and Ishii, Takatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Input data synchronizing circuit. 4,425,646, Cl. 371-61.000.

Kirchhoff, Ernst; Rander, Alfred; and Adolf, Gunter, to Estel Hoesch Werke Aktiengesellschaft. Arrangement for fabricating double conical springs. 4,424,695, Cl. 72-128.000.

Kis-Tamas, Attila: *See*—
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay nee Konya, Aranka; Vigh, Zoltan; and Sokorai nee Janki, Agnes, 4,425,158, Cl. 71-121.000.

Kitamura, Haruo: *See*—
Onoda, Susumu; Kitamura, Haruo; and Kikuchi, Toshio, 4,424,856, Cl. 164-504.000.

Kitamura, Mitsuhiro: *See*—
Mito, Ikuo; Kitamura, Mitsuhiro; Kaede, Kazuhisa; and Kobayashi, Kohroh, 4,425,650, Cl. 372-46.000.

Kitazawa, Yoichi; and Yamazaki, Naoki, to Bridgestone Tire Company Limited. Space save spare tire. 4,424,847, Cl. 152-352.00R.

Kito, Tsutomu: *See*—
Shibahashi, Yutaka; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Kito, Tsutomu, 4,425,161, Cl. 106-21.000.

Kizling, Jerzy: *See*—
Stenius, Per; Kizling, Jerzy; and Boutonnet, Magali, 4,425,261, Cl. 502-339.000.

Kizziah, Terrel A. Heat powered apparatus. 4,424,678, Cl. 60-670.000.

Klaeui, Jakob: *See*—
Bieri, Rudolf; and Klaeui, Jakob, 4,424,912, Cl. 217-122.000.

Klein, Emil. Security proof shutter. 4,424,850, Cl. 160-133.000.

Kleinewefers GmbH: *See*—
Pav, Josef; Lauschner, H. J.; and Gaede, Peter J., 4,425,489, Cl. 219-10.49A.

Kley, Richard D., to Scott Paper Company. Roll towel dispenser mounting brackets. 4,425,012, Cl. 312-37.000.

Kling, Rudolf: *See*—
Edl, Josef; Petz, Georg; and Kling, Rudolf, 4,425,105, Cl. 474-140.000.

Klioze, Solomon S.: *See*—
Allen, Richard C.; and Klioze, Solomon S., 4,425,342, Cl. 424-250.000.

Klockner-Humboldt-Deutz AG: *See*—
Brachthauser, Kunibert; and Herchenbach, Horst, 4,425,092, Cl. 432-106.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Emmerich, Hubert, 4,424,782, Cl. 123-367.000.

Klomp, Edward D., to General Motors Corporation. Engine intake port with variable swirl vanes. 4,424,777, Cl. 123-188.0VA.

Knaster, Mark B.: *See*—
Kroger, Ferdinand A.; Rod, Robert L.; Panicker, Ramachandra M. P.; and Knaster, Mark B., 4,425,194, Cl. 204-2.100.

Knieper, Josef; Printz, Heinz; and Wolfle, Robert, to Kernforschungsanlage Julich GmbH. Apparatus for storing tritium, especially tritium wastes from nuclear power plants. 4,424,903, Cl. 206-525.000.

Knight Engineering & Molding Co.: *See*—
Heinol, Alois R., 4,424,910, Cl. 215-216.000.

Knight, John C.; and Wovcha, Merle G., to Upjohn Company, The. Composition of matter and process. 4,425,429, Cl. 435-55.000.

Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., to Australasian Training Aids (Pty.) Ltd. Firing range. 4,425,500, Cl. 235-400.000.

Knoll, Gunter: *See*—
Pesch, Jurgen; Knoll, Gunter; and Thelen, Werner, 4,424,895, Cl. 198-472.000.

Knopp, Hans: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,424,614, Cl. 28-255.000.

Knox, Donald E.; Corsette, Douglas F.; and Meyer, Ronald A., to Diamond International Corporation. Dispenser having plunger locking means. 4,424,919, Cl. 222-153.000.

Ko, Duk H. Beverage container with integral straw. 4,424,913, Cl. 220-90.200.

Kobata, Yoshihiro: *See*—
Okubo, Kozo; Kobata, Yoshihiro; Asakura, Osamu; and Nishikawa, Tatsuo, 4,424,743, Cl. 101-99.000.

Kobayashi, Kazuto: *See*—
Yamamoto, Shigeo; and Kobayashi, Kazuto, 4,425,635, Cl. 367-125.000.

Kobayashi, Kohroh: *See*—
Mito, Ikuo; Kitamura, Mitsuhiro; Kaede, Kazuhisa; and Kobayashi, Kohroh, 4,425,650, Cl. 372-46.000.

Kobayashi, Ryuichiro: *See*—
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,425,422, Cl. 430-242.000.

Kobayashi, Tadashi: *See*—
Shibano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, 4,425,176, Cl. 156-244.110.

Kobe, Inc.: *See*—
Peterson, Daniel G.; and Erickson, John W., 4,425,083, Cl. 417-56.000.
Peterson, Daniel G.; and Erickson, John W., 4,425,086, Cl. 417-388.000.

Kobori, Michio: *See*—
Nakata, Kojiro; Endo, Yasunobu; Terada, Akitomo; Hayashi, Kazumasa; and Kobori, Michio, 4,425,452, Cl. 524-47.000.

Koda, Kazutoshi. Pinch valve. 4,424,832, Cl. 137-844.000.

Kodjabashev, Petko V.; Malinovski, Georgi P.; and Atanassov, Atanas T., to Obedineni Zavodi Za Zapametyavashti Ustroystva. Ceramic-ferrite head. 4,425,594, Cl. 360-129.000.

Kohara, Tadao: *See*—
Mikuni, Yoshio; Kohara, Tadao; and Yoneda, Yoshihide, 4,424,758, Cl. 112-103.000.

Kohayakawa, Hiroyuki, to TOSO Kabushiki Kaisha. Screen-operating device for use in a roller blind. 4,424,851, Cl. 160-298.000.

Kohl, Paul A.: *See*—
Bessette, Jeffrey R.; and Kohl, Paul A., 4,425,196, Cl. 204-15.000.

Kohno, Michinaga: *See*—
Ohashi, Toshijiro; Yamaguchi, Yasuhiro; Kohno, Michinaga; and Kamita, Nobu, 4,424,939, Cl. 242-4.00R.

Koike, Kazuyoshi; Watanabe, Junya; and Someya, Masami, to Toyo Impanki Co., Ltd. Drive axle device. 4,424,874, Cl. 180-70.00R.

Koike, Yoshiyasu: *See*—
Ido, Tadashi; Yokoyama, Hirotaka; Wada, Moriyasu; Oguchi, Toshihiko; Ishizawa, Akio; and Koike, Yoshiyasu, 4,425,401, Cl. 428-329.000.

Koiso, Takashi, to Sumitomo Electric Industries, Ltd. Method for bonding sintered metal pieces. 4,425,299, Cl. 419-6.000.

Kolimann, Harald. Drill screw. 4,425,066, Cl. 411-387.000.

Kollmorgen Technologies Corporation: *See*—
Nuzzi, Francis J.; and Duffy, John K., 4,425,380, Cl. 427-97.000.

Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, to Konishiroku Photo Industry Co., Ltd. Formation of color photographic image with azo dye containing alkoxy or thioalkoxy metal chelating group. 4,425,422, Cl. 430-242.000.

Komendowski, Henry: *See*—
Weiler, Gerhard H.; and Komendowski, Henry, 4,425,294, Cl. 264-525.000.

Komura, Hirotsugu: *See*—
Mizuno, Takaji; Mizuno, Masanori; Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,425,493, Cl. 219-130.510.

Komura, Tsuneo: *See*—
Oosaka, Shigenori; and Komura, Tsuneo, 4,425,171, Cl. 156-64.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Enomoto, Masayuki; and Kanai, Kiyoshi, 4,425,494, Cl. 219-216.000.
Iwaki, Akio; Nishijima, Toyoki; Iijima, Akio; and Sasazawa, Tatsuya, 4,425,418, Cl. 430-106.000.
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,425,422, Cl. 430-242.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,425,035, Cl. 355-3.0CH.

Konsti, Pentti J.; and Nurmi, Antti L., to OY Nokia AB. Method of piling and a transport storage pile formed of ribbon. 4,425,109, Cl. 493-410.000.

Koppers Company, Inc.: *See*—
Wilson, Evearist B.; and Ruthenberg, Meyer L., 4,425,068, Cl. 414-36.000.

Korec, Benjamin: *See*—
Thomson, David; and Korec, Benjamin, 4,424,952, Cl. 251-54.000.

Korf Technologies, Inc.: *See*—
Wells, William, 4,424,955, Cl. 266-44.000.

Kormoczy, Peter: *See*—
Szantay, Csaba; Novak, Lajos; Aszodi, Jozsef; Simonidesz, Vilmos; Galambos, Geza; Kovacs, Gabor; Virag, Sandor; Stadler, Istvan; and Kormoczy, Peter, 4,425,358, Cl. 424-285.000.

Korn, Felix: *See*—
Ondris, Joseph F.; and Korn, Felix, 4,424,897, Cl. 206-45.140.

Kosanovich, Nicholas S.: *See*—
Detinko, Felix M.; Kosanovich, Nicholas S.; and Levino, John A., 4,425,523, Cl. 310-258.000.

Kotwicki, Allan J., to General Motors Corporation. Combustion chamber inlet temperature corrected combustion initiation timing. 4,424,783, Cl. 123-418.000.

Kovach, Stephen M.: *See*—
Hettinger, William P., Jr.; Kovach, Stephen M.; and Hoffman, James F., 4,425,259, Cl. 502-74.000.

Kovacs, Gabor: *See*—
Szantay, Csaba; Novak, Lajos; Aszodi, Jozsef; Simonidesz, Vilmos; Galambos, Geza; Kovacs, Gabor; Virag, Sandor; Stadler, Istvan; and Kormoczy, Peter, 4,425,358, Cl. 424-285.000.
Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Szmeghy, Zoltan, 4,425,349, Cl. 424-258.000.

Kovacs, Laszlo: *See*—
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Srilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Kowa Company, Ltd.: *See*—
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,425,430, Cl. 435-80.000.

Kramer, Dale C. Lightweight aircraft. 4,424,946, Cl. 244-13.000.

Krause, Peter E. F. Method of making integral corrosion resistant manifold. 4,424,622, Cl. 29-611.000.

Krezak, John E., to Boeing Company, The. Fatigue resistant rivet. 4,425,067, Cl. 411-500.000.

Krishnan, Sivaram: *See*—
Baron, Arthur L.; Krishnan, Sivaram; Witman, Mark W.; and White, Roger J., 4,425,456, Cl. 524-165.000.

Krisner, James F.: *See*—
Guest, Neil A.; and Krisner, James F., 4,424,665, Cl. 60-39.020.

Kroenke, William J., to B. F. Goodrich Company, The. Tridodecylammonium molybdates. 4,425,279, Cl. 260-429.00R.

Kroger, Ferdinand A.; Rod, Robert L.; Panicker, Ramachandra M. P.; and Knaster, Mark B., to Monosolar, Inc. Photo-voltaic power generating means and methods. 4,425,194, Cl. 204-2.100.

Krome, Edward F., Jr.: *See*—
Huff, Robert O.; and Krome, Edward F., Jr., 4,425,102, Cl. 474-28.000.

Kroninger, Paul M., Jr.; Freud, Paul J.; and Updike, Dean P., to General Signal Corporation. Silicon diaphragm capacitive pressure transducer. 4,424,713, Cl. 73-718.000.

Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Szilard; and Szepvolgyi, Janos, to Tatabanyai Szenbanyak. Method for the production of liquid carbon compounds from coal. 4,425,219, Cl. 208-8.00R.

Krubsack, Larry J.; and Volk, Thomas G., to Hartland Products Company, Inc. Adjustable height lighting fixture with swivel mounted lamp assembly. 4,425,610, Cl. 362-419.000.

Krude, Werner, to Uni-Cardan Aktiengesellschaft. Angularly movable universal joint. 4,425,101, Cl. 464-139.000.

Kubota, Ltd.: *See*—
Fujimoto, Tadao; and Kawasugi, Tadaaki, 4,425,231, Cl. 210-96.100.

Kuecker, Ward A.: *See*—
Cason, William C.; and Kuecker, Ward A., 4,425,629, Cl. 364-900.000.

Kugler, Tibor: *See*—
Textor, Marcus; Kugler, Tibor; and Gabathuler, Jean-Pierre, 4,425,411, Cl. 428-702.000.

Kuhlmann, Herbert, to SIDEPAL S.A. Societe Industrielle de Participations Luxembourgeoise. Cover for electric-arc crucible. 4,425,656, Cl. 373-74.000.

Kuhnle, Hans: *See*—
Wolff, Hans P.; Heerdt, Ruth; Hubner, Manfred, deceased; Kuhnle, Hans; and Schmidt, Felix H., 4,425,360, Cl. 424-309.000.

Kulak, John, to Deere & Company. Anti-windrowing attachment for a rotary cutter. 4,424,661, Cl. 56-320.200.

Kunikata, Kenji: *See*—
Yamada, Yasushi; Kunikata, Kenji; and Otake, Hideo, 4,425,270, Cl. 260-153.000.

Kuntz, David H. Stethoscope-type recording system with stretched-in-time playback. 4,424,815, Cl. 128-715.000.

Kunz, James B.: *See*—
Pruden, Samuel H.; and Kunz, James B., 4,424,977, Cl. 279-121.000.

Kupfer, Manfred: *See*—
Beer, Gunter; Pesch, Wolfgang; Friedemann, Wolfgang; and Kupfer, Manfred, 4,425,291, Cl. 264-42.000.

Kurashina, Kozo: *See*—
Sekimoto, Kunio; Yamamoto, Katsuhiko; Yamamitsu, Chojuro; and Kurashina, Kozo, 4,425,585, Cl. 358-328.000.

Kurata, Hirotaka, to Trio Kabushiki Kaisha. Videodisc playback apparatus. 4,425,587, Cl. 358-335.000.

Kurtz, Leonard D.; and Bidwell, Robert E., to BioResearch Inc. Two-chamber underwater drainage apparatus with oneway outflow valve. 4,425,125, Cl. 604-321.000.

Kurtz, Stuart J.; Scarola, Leonard S.; and Miller, John C., to Union Carbide Corporation. Mixer heads for polyolefin extruders. 4,425,044, Cl. 366-79.000.

Kuusik, Uno, to Chrysler Corporation. Flyweight governor. 4,424,826, Cl. 137-54.000.

Kyle, James C. Progressively fused ceramic seals between spaced members such as a terminal pin and a ferrule. 4,425,476, Cl. 174-152.0GM.

Kyoori, Yooichi: *See—*
Takeda, Sadao; and Kyoori, Yooichi, 4,425,490, Cl. 219-10.55B.

Kyoraku Co., Ltd.: *See—*
Sumi, Takehiko; Harada, Masao; and Iwaya, Yoshikazu, 4,424,834, Cl. 138-121.000.

Kyte, Garrett J. Feed pot lid. 4,424,641, Cl. 43-102.000.

La Telemecanique Electrique: *See—*
Planche, Jean P., 4,425,624, Cl. 364-802.000.

Labavia S.G.E.: *See—*
Bertrand, Philippe; and Machillot, Jean-Pierre, 4,425,006, Cl. 303-3.000.

Lada, Henry: *See—*
Fishter, Robert E.; Lada, Henry; and Putnam, Victoria M., 4,425,185, Cl. 156-656.000.

Lafarge Coppee: *See—*
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Paliard, Maurice, 4,425,163, Cl. 106-100.000.

La Fiandra, Carlo F.; and Nelson, Burke E., to Perkin-Elmer Corporation, The. Technique to modify wafer geometry. 4,425,038, Cl. 355-73.000.

LaFleur, Robbie J.: *See—*
Jacocks, Claud L.; LaFleur, Robbie J.; and Grimsley, Ralph L., 4,425,239, Cl. 210-787.000.

Laitram Corporation, The: *See—*
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Matsuura, Masataka: *See*—
Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, 4,425,029, Cl. 350-338.000.
Mattel, Inc.: *See*—
Sapkus, Jurgis; Clarke, Charles D.; Lewis, J. Stephen; and Mills-Winkler, James P., 4,424,644, Cl. 46-135.00R.
Mattsson, Karl-Erik, to Festo-Maschinenfabrik Gottlieb Stoll. Pivotally supported gripping mechanism. 4,425,073, Cl. 414-730.000.
Mauer, Alexander; Wasel-Nielen, Horst-Dieter; and Adrian, Renate, to Hoechst Aktiengesellschaft. Cogranulate of alkali metal silicate and alkali metal polyphosphate, and process for making it. 4,425,253, Cl. 252-135.000.
Mauri, Ambrogio. Carriage body for public transportation vehicles. 4,425,001, Cl. 296-178.000.
Mauries, Reinhard: *See*—
Rohner, Joachim; Zumfeld, Heinz; Mauries, Reinhard; and Preuhs, Hans-Jurgen, 4,424,663, Cl. 57-22.000.
Mautner, Jacob E.: *See*—
Guiler, Richard S.; Mautner, Jacob E.; and Moberg, Sigurd M., 4,424,995, Cl. 292-323.000.
Maxwell, William H., III. High strength light weight bike axle. 4,424,981, Cl. 280-288.000.
May, Oscar W.; and Hoekstra, Philip M., to Buckman Laboratories, Inc. Dimethylamide and cationic surfactant debonding compositions and the use thereof in the production of fluff pulp. 4,425,186, Cl. 162-158.000.
Mayfield, John M., Jr.; Haselswerdt, Vernon W.; and Hinchliffe, Hugh A., to Microphor, Inc. Apparatus for maintaining a diesel engine in restarting condition. 4,424,775, Cl. 123-142.50R.
McAloon, Kevin T.: *See*—
Padget, John C.; McAloon, Kevin T.; and Burgess, Anthony J., 4,425,465, Cl. 524-450.000.
McClelland, Henry T.: *See*—
Goldstein, Sherwood; McClelland, Henry T.; and Scherbner, Paul J., 4,425,168, Cl. 148-2.000.
McCollum, Gregory J.: *See*—
Makhlouf, Joseph M.; McCollum, Gregory J.; and Kerr, Paul R., 4,425,468, Cl. 524-710.000.
McConchie, William L. Tire pressure indicator and method for detecting reduction of pressure. 4,425,558, Cl. 340-58.000.
McConway & Torley Corporation: *See*—
Oshinsky, Frank W., 4,424,620, Cl. 29-558.000.
McCullers, Jeffrey L. Retaining wall. 4,425,052, Cl. 405-32.000.
McCutcheon, Joe R., Sr., to Reynolds Metals Company. Method of making electrical cable. 4,425,374, Cl. 427-44.000.
McDonnell Douglas Corp.: *See*—
Boehringer, Wilfred E.; and Walker, James V., 4,424,716, Cl. 73-861.560.
McGill, Howard L., to Schlumberger Technology Corporation. Deflate-equalizing valve apparatus for inflatable packer formation tester. 4,424,860, Cl. 166-113.000.
McGlone, William: *See*—
Benedyk, Joseph C.; McGlone, William; and Amos, Homer, 4,425,393, Cl. 428-95.000.
McGuire, Patrick L., to United States of America, Energy. Method for production of hydrocarbons from hydrates. 4,424,866, Cl. 166-303.000.
McKee, William R.: *See*—
Levine, Jules D.; McKee, William R.; and Carson, Kent R., 4,425,408, Cl. 428-403.000.
McKinley, Larry F., to Allied Corporation. Method of forming battery electrodes. 4,425,192, Cl. 204-2.100.
McLaughlin, Gerald. Rapid method for the etching and cleaning of dental casting metals. 4,425,204, Cl. 204-129.700.
McLoughlin, Robert H., to Raychem Limited. Method of making heat shrinkable articles. 4,425,174, Cl. 156-218.000.
McMurtrie, Andrew: *See*—
Silberstein, Donald A.; and McMurtrie, Andrew, 4,424,819, Cl. 131-336.000.
McReynolds, James. Check valve arrangement for engine driven pneumatic compressors. 4,425,085, Cl. 417-364.000.
Mead Corporation, The: *See*—
Lanier, Charles E., 4,424,901, Cl. 206-434.000.
Measure Control Devices, Inc.: *See*—
Feuerstein, Andrew E.; and Aprea, Michael F., 4,424,921, Cl. 222-456.000.
Medtronic, Inc.: *See*—
Doring, John; and Amundson, Rodney, 4,424,818, Cl. 178-784.000.
Meguro, Takeshi; and Ito, Yukio, to Fujitsu Limited. Dielectric filter module. 4,425,555, Cl. 333-202.000.
Mehta, Jitesh R.; and Larson, Andrew H., to GNB Batteries Inc. Refining process for removing antimony from lead bullion. 4,425,160, Cl. 75-63.000.
Meier, Raymond C., Jr.; and Gable, Stewart V., to Ford Motor Company. Frequency domain engine defect signal analysis. 4,424,709, Cl. 73-117.300.
Meiners, Elmo R., to M & W Gear Company. Supplementary fuel injection system for a turbocharged internal combustion engine. 4,424,676, Cl. 60-605.000.
Mercedes-Benz Do Brasil S/A: *See*—
Filho, Angelo I., 4,424,876, Cl. 180-175.000.

Merck & Co., Inc.: *See—*
Alexander, Jose; and Fix, Joseph A., 4,425,337, Cl. 424-181.000.
Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; and Varga, Sandor L., 4,425,269, Cl. 260-112.50R.

Merkle Engineers, Inc.: *See—*
Merkle, Frank P., 4,424,756, Cl. 110-332.000.

Merkle, Frank P., to Merkle Engineers, Inc. Suspended roof construction for industrial furnaces. 4,424,756, Cl. 110-332.000.

Merrell, Richard G., to Oak Industries Inc. Catv converter with key-lock to favorite channels. 4,425,579, Cl. 358-86.000.

Merrill Engineering Laboratories, Inc.: *See—*
Erickson, Lowell H.; and Merrill, Marcellus S., 4,424,700, Cl. 73-1.00E.

Merrill, Marcellus S.: *See—*
Erickson, Lowell H.; and Merrill, Marcellus S., 4,424,700, Cl. 73-1.00E.

Mertens, Ludovicus M.: *See—*
Rutgers, Antonius A.; Mertens, Ludovicus M.; and Van Grasdorff, Maurits W., 4,425,421, Cl. 430-238.000.

Meshkov, Vladimir V.: *See—*
Bely, Vladimir A.; Sviridenok, Anatoly I.; Savkin, Valentin G.; Meshkov, Vladimir V.; and Myshkin, Nikolai K., 4,425,247, Cl. 252-12.000.

Metal Box Limited: *See—*
Perigo, John A.; and Divall, John E., 4,424,659, Cl. 53-425.000.

Metallgesellschaft AG: *See—*
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Paliard, Maurice, 4,425,163, Cl. 106-100.000.

Meuleman, Gaston, to Northrop Corporation. Fuel cell leak detector. 4,424,708, Cl. 73-40.000.

Meyer, John H.: *See—*
Guerra, Salvatore; Meyer, John H.; and Boller, Thomas E., 4,425,184, Cl. 156-655.000.

Meyer, Ronald A.: *See—*
Knox, Donald E.; Corsette, Douglas F.; and Meyer, Ronald A., 4,424,919, Cl. 222-153.000.

Meyer, Willy; and Fory, Werner, to Ciba-Geigy Corporation. N-Phenylsulfonyl-N'-pyrimidinylureas. 4,425,154, Cl. 71-92.000.

Mezei, Tibor: *See—*
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay nee Konya, Aranka; Vigh, Zoltan; and Sokorai nee Janki, Agnes, 4,425,158, Cl. 71-121.000.

MGS Machine Corporation: *See—*
Bahr, Melford J.; Ehalt, Cyril A.; and Geist, Wayne R., 4,425,181, Cl. 156-497.000.

Mibae, Jiro: *See—*
Taniguchi, Takashi; and Mibae, Jiro, 4,425,403, Cl. 428-331.000.

Michaud, Orean E.: *See—*
Kindl, George F.; and Michaud, Orean E., 4,425,061, Cl. 408-16.000.

Microphor, Inc.: *See—*
Mayfield, John M., Jr.; Haselswerdt, Vernon W.; and Hinchliffe, Hugh A., 4,424,775, Cl. 123-142.50R.

Mikuni Kogyo Kabushiki Kaisha: *See—*
Ishida, Takashi; and Tominari, Noboru, 4,424,785, Cl. 123-479.000.

Mikuni, Yoshio; Kohara, Tadao; and Yoneda, Yoshihide, to Maruzen Sewing Machine Company. Embroidering apparatus for use with sewing machines. 4,424,758, Cl. 112-103.000.

Milberger, Walter E., to United States of America, Air Force. High voltage field effect transistor pulse apparatus. 4,425,518, Cl. 307-571.000.

Milde, Friedhelm: *See—*
Bretthauer, Karlheinz; and Milde, Friedhelm, 4,425,658, Cl. 373-103.000.

Milette, Debra A.: *See—*
Berkowitz, Daniel; Bennett, Alan B.; Secrist, John L.; and Milette, Debra A., 4,425,367, Cl. 426-89.000.

Miller, Edward B.: *See—*
Bedard, James F.; Cutler, Scott E.; Eichelberger, Charles W.; Miller, Edward B.; and Nati, Salvatore F., Jr., 4,425,628, Cl. 364-900.000.

Miller, James A.: *See—*
Smith, Michael D.; and Miller, James A., 4,425,550, Cl. 330-107.000.

Miller, John C.: *See—*
Kurtz, Stuart J.; Scarola, Leonard S.; and Miller, John C., 4,425,044, Cl. 366-79.000.

Miller, Richard F., to Atlantic Richfield Company. Method for minimizing fouling of heat exchangers. 4,425,223, Cl. 208-48.0AA.

Miller, Richard L. Apparatus and method for storing and interrelating visual data and computer information. 4,425,586, Cl. 358-335.000.

Miller, Robert J., to Colt Industries Operating Corp. Manually adjustable apparatus and system for selectively controlling the air-fuel ratio supplied to a combustion engine. 4,424,784, Cl. 123-438.000.

Miller, Wayne D.: *See—*
Butterworth, George A. M.; Elias, Robert T.; Miller, Wayne D.; and Shepherd, Robert C., 4,425,126, Cl. 604-366.000.

Millet, George H., to Minnesota Mining & Manufacturing Company. Novel cyanoacrylate adhesive compositions and methods of bonding. 4,425,471, Cl. 526-298.000.

Milliken Research Corporation: *See—*
Berczi, Charles N., 4,425,398, Cl. 428-253.000.
Engels, Walter, 4,424,613, Cl. 26-2.00R.

Milliman, Edward M., to United States of America, Energy. Dust feed mechanism. 4,424,896, Cl. 198-545.000.

Millington, Donald L.; and Nyquist, Gerald A., to General Motors Corporation. Vehicle fluid power system reservoir. 4,424,829, Cl. 137-590.000.

Millioud, Alain: *See—*
Bruttel, Beat; Schneider, Hansjorg; Millioud, Alain; and Rosch, Michael, 4,425,134, Cl. 8-524.000.

Millman, William S., to Union Oil Company of California. Hydrocarbon desulfurization process with a catalyst of Co-Mo-P. 4,425,221, Cl. 208-216.00R.

Millmaster Onyx Group, Inc.: *See—*
Green, Harold A.; Weinstein, Morris; and Prodo, Kenneth W., 4,425,243, Cl. 252-8.50C.

Mills-Winkler, James P.: *See—*
Sapkus, Jurgis; Clarke, Charles D.; Lewis, J. Stephen; and Mills-Winkler, James P., 4,424,644, Cl. 46-135.00R.

Mimura, Gen, to Hitachi Chemical Company, Ltd. Dehydrating blade for paper machine. 4,425,189, Cl. 162-352.000.

Minnesota Mining & Manufacturing Company: *See—*
Millet, George H., 4,425,471, Cl. 526-298.000.

Miro, Nemesio D.; and Kaus, Malcolm J., to Phillips Petroleum Company. Supported high efficiency polyolefin catalyst component and methods of making and using the same. 4,425,257, Cl. 502-154.000.

Miska, Fred S.; and Duddles, James A., to General Motors Corporation. Vehicle air conditioning compressor control system. 4,424,682, Cl. 62-133.000.

Mito, Ikuo; Kitamura, Mitsuhiro; Kaede, Kazuhisa; and Kobayashi, Kohroh, to Nippon Electric Co., Ltd. Buried heterostructure laser diode. 4,425,650, Cl. 372-46.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Mizuno, Takaji; Mizuno, Masanori; Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,425,493, Cl. 219-130.510.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fujiwara, Haruyoshi, 4,425,188, Cl. 162-300.000.

Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha: *See—*
Arita, Yoji, 4,425,200, Cl. 204-67.000.

Mitsuda, Yutaka: *See—*
Tanaka, Hideyuki; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,425,258, Cl. 502-154.000.

Mitsui Ocean Development & Engineering Co., Ltd.: *See—*
Muto, Ikuo; and Tatsuguchi, Masamitsu, 4,425,053, Cl. 405-63.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Kawai, Yoichi; Nakamura, Yoshiro; Gotoh, Yoshihisa; Maki, Masami; Yokote, Sachio; and Sekiguchi, Katsumi, 4,425,262, Cl. 252-511.000.
Toyoda, Yoshiaki; Ikeda, Yoshihiro; and Arashiba, Nobumasa, 4,425,255, Cl. 502-38.000.

Mitsuya, Yasunaga; Hoshiya, Kunio; Oguchi, Shigemitsu; and Kaneko, Reizo, to Nippon Telegraph & Telephone Public Corp. Ferro fluidic seal. 4,424,974, Cl. 277-80.000.

Miura, Kiyoshi: *See—*
Sasaya, Osamu; Nishizawa, Masahiro; Yokomizo, Hiroshi; Miura, Kiyoshi; and Tomita, Yoshifumi, 4,425,419, Cl. 430-179.000.

Miyamoto, Tomohisa: *See—*
Fujii, Setsuro; Yasui, Bompei; Nakamura, Mitsuo; Hirohashi, Mitsuru; Miyamoto, Tomohisa; Ando, Kazuko; Hashimoto, Iwao; Umeda, Naoki; and Kawasaki, Masahiro, 4,425,335, Cl. 424-180.000.

Miyasaka, Takao, to Victor Company of Japan, Limited. Rotational speed indication signal generator having a plurality of generating coils. 4,425,522, Cl. 310-268.000.

Mizuno, Kazutoshi; and Ono, Shigeo, to Nissan Motor Co., Ltd. Impact energy absorbing structure for F-F type motor vehicle. 4,424,986, Cl. 280-784.000.

Mizuno, Masanori: *See—*
Mizuno, Takaji; Mizuno, Masanori; Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,425,493, Cl. 219-130.510.

Mizuno, Takaji; Mizuno, Masanori; Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, to Mitsubishi Denki Kabushiki Kaisha. Pulse arc welding machine. 4,425,493, Cl. 219-130.510.

Mizutani, Kiyokazu; and Ogasawara, Takahisa, to Toagosei Chemical Industry Co., Ltd. Polymerizable bicyclic orthoester compounds. 4,425,473, Cl. 549-363.000.

Mobay Chemical Corporation: *See—*
Baron, Arthur L.; Krishnan, Sivaram; Witman, Mark W.; and White, Roger J., 4,425,456, Cl. 524-165.000.

Moberg, Sigurd M.: *See—*
Guiler, Richard S.; Mautner, Jacob E.; and Moberg, Sigurd M., 4,424,995, Cl. 292-323.000.

Mobil Oil Corporation: *See—*
Piotrowski, Alfred B.; and Davis, Robert H., 4,425,248, Cl. 252-49.300.
White, James R., 4,424,863, Cl. 166-268.000.

Mochida, Haruo, to Nissan Motor Co., Ltd. Construction of cylinder lock. 4,424,694, Cl. 70-422.000.

Moger nee Eremineva, Galina: *See—*
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Moldestad, Jon P. Press machine safety apparatus. 4,424,741, Cl. 100-53.000.

Moller, Hinrich; and Osberghaus, Rainer, to Henkel Kommanditgesellschaft auf Aktien. Method of suppressing body odor with aminobenzoic acid amides. 4,425,327, Cl. 424-65.000.

Moller, Paul S. Resonator type mufflers. 4,424,882, Cl. 181-231.000.

Monahan, Jack J.: *See*—
Becker, Alan R.; Monahan, Jack J.; and Schneider, Fred J., 4,425,074, Cl. 414-736.000.

Monarch Marking Systems, Inc.: *See*—
Jenkins, William A., 4,425,394, Cl. 428-136.000.

Mondet, Jean: *See*—
Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, 4,425,326, Cl. 424-61.000.

Monne, Maxime: *See*—
Adamowski, Andre; Gallet, Gerard; Lhermitte, Jacques; Monne, Maxime; and Vautherot, Guy, 4,425,296, Cl. 376-245.000.

Monosolar, Inc.: *See*—
Kroger, Ferdinand A.; Rod, Robert L.; Panicker, Ramachandra M. P.; and Knaster, Mark B., 4,425,194, Cl. 204-2.100.

Monsanto Company: *See*—
Ebner, Jerry R., 4,425,260, Cl. 502-255.000.
Santer, J. Owen; and Spitz, George T., 4,425,466, Cl. 524-512.000.
Weingarten, Harold I., 4,425,428, Cl. 435-23.000.

Montedison S.p.A.: *See*—
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,425,357, Cl. 424-278.000.
Camprincoli, Pierpaolo, 4,425,402, Cl. 428-330.000.

Monville, Jean M.: *See*—
Fillon, Marcel; and Monville, Jean M., 4,425,009, Cl. 308-187.100.

Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, to International Flavors & Fragrances Inc. Process for augmenting or enhancing the raspberry aroma or taste of a foodstuff or chewing gum using a mixture of ketones. 4,425,365, Cl. 426-3.000.

Moon, Howard R.: *See*—
Balint, Peter; Burns, Fredrick B.; and Moon, Howard R., 4,424,603, Cl. 15-210.00R.

Moore, Dan B. Method for continuously producing a flexible drywall joint filler. 4,425,175, Cl. 156-229.000.

Moore, William C.: *See*—
Shelby, Billy L.; and Moore, William C., 4,424,993, Cl. 292-128.000.

Morel, Philippe: *See*—
Doyen, Jean; Morel, Philippe; and Resneau, Jean C., 4,425,575, Cl. 357-81.000.

Morgan, Marshall M. Ice rack for use in portable ice chest. 4,424,687, Cl. 62-457.000.

Mori, Hidefumi: *See*—
Izawa, Tatsuo; Mori, Hidefumi; Shimizu, Nobuo; and Murakami, Yasuji, 4,425,146, Cl. 65-18.200.

Mori, Kei. Solar direction sensor. 4,424,801, Cl. 126-425.000.

Mori, Toshihito: *See*—
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,425,430, Cl. 435-80.000.

Mori, Yoshinobu, to Citizen Watch Co., Ltd. Buckle for watch bands. 4,424,611, Cl. 24-192.000.

Moriguchi, Fujio; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Heat transfer recording apparatus. 4,425,568, Cl. 346-76.0PH.

Morishita, Shigefumi; and Ebata, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Surface acoustic wave resonator device. 4,425,554, Cl. 333-195.000.

Morita, Minoru: *See*—
Numano, Masachika; Akita, Shinji; and Morita, Minoru, 4,424,616, Cl. 29-33.00T.

Moriya, Yoshikazu: *See*—
Shiratori, Harunori; Kikuchi, Kenichi; and Moriya, Yoshikazu, 4,424,984, Cl. 280-661.000.

Morozov, Vladimir I.: *See*—
Panov, Anatoly F.; Morozov, Vladimir I.; Makarov, Kirill A.; and Rudnev, Alexandr V., 4,425,507, Cl. 250-442.100.

Morris, Drew W.: *See*—
Howells, John N. M.; Morris, Drew W.; and Tichenor, Richard L., 4,425,070, Cl. 414-498.000.

Morris, Henry. Tactile writing aid. 4,425,095, Cl. 434-117.000.

Morrison-Knudsen Company, Inc.: *See*—
Cake, Marcus P.; Falter, Harry W.; Batchelor, Clement W.; and Guarini, Michael A., 4,425,495, Cl. 219-267.000.

Morse, Elliott M.: *See*—
Dittmann, John F.; Morse, Elliott M.; and Carr, Earl S., 4,425,412, Cl. 429-53.000.

Morton, Anthony J.; Harvey, Kenneth; and Gutenberg, Hermann, to Colgate-Palmolive Company. Smooth dental cream. 4,425,323, Cl. 424-52.000.

Moses, Donald W.; Hustig, Charles; and Ballard, C. Ray, to Applied Spectrum Technologies, Inc. Simultaneous transmission of two information signals within a band-limited communications channel. 4,425,642, Cl. 370-76.000.

Moses, Donald W.; Hustig, Charles; and Ballard, C. Ray, to Applied Spectrum Technologies, Inc. Data under voice communications system. 4,425,661, Cl. 375-1.000.

Moskin, Jeffrey M.; and Wertz, Keith J. Pistol grip controller. 4,425,488, Cl. 200-220.000.

Mostek Corporation: *See*—
Swain, William J., 4,425,633, Cl. 365-194.000.

Moszumanski, Ryszard: *See*—
Polanski, Zbigniew; and Moszumanski, Ryszard, 4,424,673, Cl. 60-486.000.

Motomura, Kazuhiko, to Nishiki Co., Ltd. Air-permeable and waterproof diaper cover. 4,425,128, Cl. 604-381.000.

Motor Wheel Corporation: *See*—
Weeks, James B., 4,425,008, Cl. 305-24.000.

Motorola Inc.: *See*—
Groth, Edward J., Jr., 4,425,666, Cl. 375-48.000.
Smith, Michael D.; and Miller, James A., 4,425,550, Cl. 330-107.000.

Mount, Bruce E., to Perkin-Elmer Corp., The. Method of making electrical connections to thin film coatings and the electrical connector formed thereby. 4,425,526, Cl. 310-800.000.

Mourou, Gerard, to University of Rochester, The. Laser system using organic dye amplifier. 4,425,652, Cl. 372-69.000.

Muehleisen, Paul. Passive bowstring release mechanism. 4,424,791, Cl. 124-35.00A.

Mueller, William C.; and Plunkett, Larry, to Perkin-Elmer Corporation, The. Chart recorder. 4,425,571, Cl. 346-136.000.

Muhlenbeck, Josef: *See*—
Bauer, Hanns G.; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,425,657, Cl. 373-93.000.

Muhlfelder, Ludwig; Phillips, Kevin J.; and Blasnik, Steven L., to RCA Corporation. Magnetically torqued nutation damping. 4,424,948, Cl. 244-166.000.

Mukherjee, Dilip, to BBC Brown, Boveri & Company Limited. Combined gas turbine and steam turbine power station. 4,424,668, Cl. 60-39.182.

Muller, Klaus; and Tancer, Leon, to Raymond, A. Fastening plate for securing a snap pin to an automobile door panel. 4,424,612, Cl. 24-669.000.

Muller, Werner: *See*—
Hockele, Max; and Muller, Werner, 4,424,889, Cl. 191-39.000.

Munari, Georges J.; and Perineau, Serge M., to Compagnie Francaise des Petroles. Injection devices. 4,424,862, Cl. 166-168.000.

Murai, Mikio: *See*—
Suzuki, Takashi; Hibino, Kunio; Murai, Mikio; and Fujita, Takashi, 4,425,404, Cl. 428-341.000.

Murakami, Mutsuaki; Hiromori, Yasutaka; and Naito, Hiroshi, to Matsushita Electric Industrial Company, Limited. Ink jet recording sheet. 4,425,405, Cl. 428-342.000.

Murakami, Yasuji: *See*—
Izawa, Tatsuo; Mori, Hidefumi; Shimizu, Nobuo; and Murakami, Yasuji, 4,425,146, Cl. 65-18.200.

Muranaka, Fumio: *See*—
Hamada, Masato; Ohmura, Jukichi; and Muranaka, Fumio, 4,425,199, Cl. 204-59.00F.

Murata Manufacturing Co., Ltd.: *See*—
Wakino, Kikuo, 4,424,615, Cl. 29-25.420.

Murayama, Masato; and Akita, Mitsugi, to Honda Giken Kogyo Kabushiki Kaisha. Acoustic device for a head protector. 4,424,880, Cl. 181-129.000.

Murayama, Tomio: *See*—
Kikuchi, Yoshiki; and Murayama, Tomio, 4,424,964, Cl. 271-91.000.

Murray, Charles R.: *See*—
Harrison, Ray E.; and Murray, Charles R., 4,425,108, Cl. 493-220.000.

Musashi Co., Ltd.: *See*—
Sato, Koji; Kato, Tadao; and Kawano, Hikaru, 4,424,660, Cl. 53-540.000.

Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, to Olympus Optical Co. Ltd. Method and apparatus for reproducing optically an information recorded on a record medium along tracks. 4,425,636, Cl. 369-44.000.

Musiani, Franco, to Panda S.r.l. Silencer for pneumatic equipment. 4,424,883, Cl. 181-258.000.

Mussi, Fiorenzo; and Pariani, Emilio, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Composite hub for a helicopter rotor. 4,425,082, Cl. 416-61.000.

Mustikka, Lauri A.: *See*—
Tuovinen, Frans H.; Hokkanen, Pentti O.; Nurminen, Aimo A.; Mustikka, Lauri A.; and Virta, Matti A., 4,424,959, Cl. 266-283.000.

Muto, Ikuo; and Tatsuguchi, Masamitsu, to Mitsui Ocean Development & Engineering Co., Ltd. Oil fence arrangement. 4,425,053, Cl. 405-63.000.

Myshkin, Nikolai K.: *See*—
Bely, Vladimir A.; Sviridenok, Anatoly I.; Savkin, Valentin G.; Meshkov, Vladimir V.; and Myshkin, Nikolai K., 4,425,247, Cl. 252-12.000.

Nabial, Wanda E., to American Cyanamid Company. Solid antiperspirant stick composition. 4,425,328, Cl. 424-68.000.

Naden, Rex A., to Texas Instruments Incorporated. Educational aid for use with workbook. 4,425,099, Cl. 434-335.000.

Nagae, Hiromitsu: *See*—
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, 4,425,485, Cl. 200-19.00R.

Naito, Hiroshi: *See*—
Murakami, Mutsuaki; Hiromori, Yasutaka; and Naito, Hiroshi, 4,425,405, Cl. 428-342.000.

Naito, Youichiro: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,425,347, Cl. 424-256.000.

Nakada, Akira: *See*—
Imamura, Akio; Uchiyama, Yasuji; and Nakada, Akira, 4,424,732, Cl. 84-1.170.

Nakajima, Kazuo: *See*—
Matsui, Susumu; Nakajima, Kazuo; and Taniguchi, Tsutomu, 4,425,435, Cl. 435-190.000.

Nakamura, Kensaku. Synthetic resin pellet dehydrating apparatus. 4,424,632, Cl. 34-57.00R.

Nakamura, Mitsuo: *See*—
Fujii, Setsuro; Yasui, Bompei; Nakamura, Mitsuo; Hirohashi, Mitsuru; Miyamoto, Tomohisa; Ando, Kazuko; Hashimoto, Iwao; Umeda, Naoki; and Kawasaki, Masahiro, 4,425,335, Cl. 424-180.000.

Nakamura, Shigekazu, to Copal Company Limited. Non-contact magnetic potentiometer. 4,425,557, Cl. 338-32.00H.

Nakamura, Shunji: *See*—
Hosono, Nagao; Takahashi, Tohru; Kanbe, Junichiro; Toyono, Tsutomu; Nakamura, Shunji; and Tamura, Yasuyuki, 4,425,373, Cl. 427-14.100.

Nakamura, Yoshiro: *See*—
Kawai, Yoichi; Nakamura, Yoshiro; Gotoh, Yoshihisa; Maki, Masami; Yokote, Sachio; and Sekiguchi, Katsumi, 4,425,262, Cl. 252-511.000.

Nakanishi Metal Works Co., Ltd.: *See*—
Wakabayashi, Takao, 4,424,749, Cl. 104-172.00S.

Nakasuji, Norikazu: *See*—
Shibahashi, Yutaka; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Kito, Tsutomu, 4,425,161, Cl. 106-21.000.

Nakata, Kojiro; Endo, Yasunobu; Terada, Akitomo; Hayashi, Kazumasa; and Kobori, Michio, to Sanwa Denpun Industrial Co., Ltd.; and Shizuoka Prefecture. Coating color for paper and method for preparation of the same. 4,425,452, Cl. 524-47.000.

Nakayama, Koichi; and Fukitani, Yasuo, to Toko, Inc. Switch circuit arrangement. 4,425,563, Cl. 340-644.000.

Naramore, David C.: *See*—
Crawford, Richard R.; Blum, William P.; and Naramore, David C., 4,425,275, Cl. 260-397.250.

Nardi, Anthony P.: *See*—
de Jong, Joannes N. M.; Earle, Richard L.; and Nardi, Anthony P., 4,425,509, Cl. 290-40.00C.

Narukawa, Noriaki; Takeda, Keinosuke; and Yamazaki, Toshiyuki, to Takeda Chemical Industries, Ltd. Lankacidin derivatives used in swine husbandry. 4,425,356, Cl. 424-279.000.

Narushima, Tsugio, to Tokyo Electric Co., Ltd. Printing machine capable of printing characters on long and short paper sheets. 4,425,047, Cl. 400-605.000.

Naslund, Lars A.: *See*—
Holzwarth, George M.; Naslund, Lars A.; and Sandvik, Erik I., 4,425,246, Cl. 252-8.55D.

Nasu, Norio: *See*—
Yamaguchi, Nobutaka; Fujiyana, Masaaki; Tsuji, Nobuo; and Nasu, Norio, 4,425,400, Cl. 428-329.000.

Nati, Salvatore F., Jr.: *See*—
Bedard, James F.; Cutler, Scott E.; Eichelberger, Charles W.; Miller, Edward B.; and Nati, Salvatore F., Jr., 4,425,628, Cl. 364-900.000.

National Engineering & Contracting Company: *See*—
Spencer, Robert B., 4,424,951, Cl. 249-48.000.

National Semiconductor Corporation: *See*—
Laverty, Gerald; Kalin, August; and Seyffert, Michael, 4,425,213, Cl. 204-202.000.

Natural Energy Systems: *See*—
Rice, Warren; and Hosterman, Craig, 4,424,681, Cl. 62-114.000.

Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, to Matsushita Electric Industrial Co., Ltd. Fluid deflecting assembly. 4,424,937, Cl. 239-590.000.

Nazarenko, Nicholas, to Du Pont de Nemours, E. I., and Company. Flexible screen-printable conductive composition. 4,425,263, Cl. 252-511.000.

NCR Corporation: *See*—
Maheras, George; and Hayworth, Hubert O., 4,425,183, Cl. 156-651.000.

Neal, James V., Jr.: *See*—
Fajt, John; and Neal, James V., Jr., 4,424,894, Cl. 198-451.000.

Neary, Michael P. Solar energy system and method of use. 4,424,805, Cl. 126-452.000.

Negishi, Isamu; and Hunyu, Kazumi, to Fujikura Rubber Works, Ltd. Base fabrics for polyurethane-coated fabrics, polyurethane-coated fabrics and processes for their production. 4,425,395, Cl. 428-196.000.

Nelson, Burke E.: *See*—
La Fiandra, Carlo F.; and Nelson, Burke E., 4,425,038, Cl. 355-73.000.

Nemes, Istvan: *See*—
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Nemeth, Andras: *See*—
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Neodyne Corporation: *See*—
Dolence, Dale M., 4,424,759, Cl. 114-97.000.

Neunhoeffer, Otto; Wilhelm, Gerhard; Hockenberger, Lothar; Bergmann, Franz J.; and Endruscheit, Peter, to Rutgerswerke Aktiengesellschaft. Novel process for removal of cadmium ions. 4,425,236, Cl. 210-638.000.

Neurologics, Inc.: *See*—
Callahan, Alfred S.; Rhodes, James S.; Johnson, Timothy L.; and Durden, John G., 4,424,816, Cl. 128-731.000.

Neves, Alan M. Alcohol manufacturing process. 4,425,433, Cl. 435-163.000.

Newman, Bill H.; and Alferness, Clifton A., to Physio-Control Corporation. Automated ventilation, CPR, and circulatory assistance apparatus. 4,424,806, Cl. 128-28.000.

Newnham, Robert C.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,425,500, Cl. 235-400.000.

Newton, Roger A., to Wisconsin Electric Power Co. Decision tree graphical computer. 4,425,499, Cl. 235-70.00R.

Neymeyer, Calvin E. Gas generation apparatus. 4,425,216, Cl. 204-270.000.

NHK Spring Co., Ltd.: *See*—
Ojima, Juji, 4,425,104, Cl. 474-111.000.

Nichele, Peter J.: *See*—
Fanning, William J.; Nichele, Peter J.; and Pratali, Roger P., 4,424,617, Cl. 29-25.420.

Nicolaus, Walter: *See*—
Hesse, Anton; Scholz, Dankmar; and Nicolaus, Walter, 4,425,287, Cl. 264-22.000.

Nicolino, Muzio, to Societa Italiana Vetro Siv S.p.A. Glass mounted electrical terminal. 4,425,021, Cl. 339-275.00T.

Nihon Medi-Physics Co., Ltd.: *See*—
Yokoyama, Akira; Omomo, Yoshiro; Tanaka, Hisashi; and Saji, Hideo, 4,425,319, Cl. 424-1.100.

Nii, Setsuo: *See*—
Takagi, Yoshiaki; Sugawara, Takeshi; Nii, Setsuo; and Matsuda, Takayuki, 4,424,953, Cl. 251-368.000.

Nintendo Co., Ltd.: *See*—
Yokoi, Gunpei; and Okada, Satoru, 4,424,967, Cl. 273-1.0GC.

Nippon Air Brake Co., Ltd.: *See*—
Arikawa, Tetsuro, 4,425,622, Cl. 364-426.000.

Nippon Electric Company, Ltd.: *See*—
Kage, Kouzou, 4,425,548, Cl. 328-162.000.
Mito, Ikuo; Kitamura, Mitsuhiro; Kaede, Kazuhisa; and Kobayashi, Kohroh, 4,425,650, Cl. 372-46.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Imamura, Akio; Uchiyama, Yasuji; and Nakada, Akira, 4,424,732, Cl. 84-1.170.

Nippon Kayaku Kabushiki Kaisha: *See*—
Yamada, Yasushi; Kunikata, Kenji; and Otake, Hideo, 4,425,270, Cl. 260-153.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Numano, Masachika; Akita, Shinji; and Morita, Minoru, 4,424,616, Cl. 29-33.00T.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Hanaoka, Masanori; Hashiguchi, Yukihide; Ootsuka, Yoshinori; and Yamaguchi, Hiroaki, 4,424,705, Cl. 73-35.000.

Nippon Steel Corporation: *See*—
Onoda, Susumu; Kitamura, Haruo; and Kikuchi, Toshio, 4,424,856, Cl. 164-504.000.
Tsubakihara, Osamu; Kameyama, Kazuhide; Takahama, Hideyuki; Sakai, Kuniaki; and Tsuneoka, Akira, 4,424,855, Cl. 164-485.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Izawa, Tatsuo; Mori, Hidefumi; Shimizu, Nobuo; and Murakami, Yasuji, 4,425,146, Cl. 65-18.200.
Mitsuya, Yasunaga; Hoshiya, Kunio; Oguchi, Shigemitsu; and Kaneko, Reizo, 4,424,974, Cl. 277-80.000.

Nippondenso Co., Ltd.: *See*—
Yamamoto, Noboru; Makino, Tomoatsu; Okuda, Ryoichi; and Sakurai, Hiroshi, 4,424,704, Cl. 73-35.000.

Nishijima, Toyoki: *See*—
Iwaki, Akio; Nishijima, Toyoki; Iijima, Akio; and Sasazawa, Tatsuya, 4,425,418, Cl. 430-106.000.

Nishijo, Masaru: *See*—
Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, 4,424,937, Cl. 239-590.000.

Nishikawa, Tatsuo: *See*—
Okubo, Kozo; Kobata, Yoshihiro; Asakura, Osamu; and Nishikawa, Tatsuo, 4,424,743, Cl. 101-99.000.

Nishiki Co., Ltd.: *See*—
Motomura, Kazuhiko, 4,425,128, Cl. 604-381.000.

Nishimura, Tadashi: *See*—
Kawamura, Teruaki; Nishimura, Tadashi; Akagi, Kazuo; and Shitamatsu, Ryujiro, 4,425,062, Cl. 408-28.000.

Nishiyama, Keizo, to Canon Kabushiki Kaisha. Measuring apparatus. 4,425,041, Cl. 365-371.000.

Nishizawa, Junichi; Suzuki, Rensaku; and Aizawa, Kenji, to Shin Tohoku Chemical Industries Inc. Adsorption by zeolitic composition. 4,425,143, Cl. 55-31.000.

Nishizawa, Masahiro: *See*—
Sasaya, Osamu; Nishizawa, Masahiro; Yokomizo, Hiroshi; Miura, Kiyoshi; and Tomita, Yoshifumi, 4,425,419, Cl. 430-179.000.

Nissan Chemical Industries, Ltd.: *See*—
Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Sato, Jun; Ozawa, Kiyomi; Hirose, Masayoshi; and Hirata, Kiminori, 4,425,343, Cl. 424-250.000.

Nissan Motor Company, Limited: *See*—
Imai, Hiroshi; and Sugasawa, Fukashi, 4,425,604, Cl. 362-223.000.
Kamimoto, Shohei, 4,425,535, Cl. 318-139.000.
Mizuno, Kazutoshi; and Ono, Shigeo, 4,424,986, Cl. 280-784.000.
Mochida, Haruo, 4,424,694, Cl. 70-422.000.
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, 4,425,485, Cl. 200-19.00R.

Takei, Hirofumi, 4,424,961, Cl. 267-64.270.
Tokura, Naomi, 4,424,671, Cl. 60-274.000.
Yoshiyuki, Kazuhiko, 4,424,996, Cl. 293-117.000.
Nittetu Chemical Engineering Ltd.: *See*—
Shimoi, Yoichi; Akune, Mikio; Akimoto, Tamotsu; and Watanabe, Ryuzo, 4,425,285, Cl. 261-95.000.
Nixon, Ivor G. Method of using partial combustion burners. 4,425,159, Cl. 75-29.000.
Noack, Fritz. Arrangement for protection of metal surfaces against corrosion. 4,424,838, Cl. 141-325.000.
Noda, Shinji: *See*—
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, 4,424,762, Cl. 118-410.000.
Nomura, Hiroshi: *See*—
Kamohara, Hideaki; Imamura, Minoru; Higaki, Hiroshi; Yoshitomi, Yuji; Uno, Syuzo; Makino, Kazuhiro; and Nomura, Hiroshi, 4,425,048, Cl. 403-191.000.
Nonomura, Keisaku: *See*—
Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; and Wada, Tomio, 4,425,572, Cl. 357-4.000.
Norcross, Neil L.; and Opdebeeck, Johanna P., to Cornell Research Foundation, Inc. Bovine mastitis vaccine and method for detecting efficacy thereof. 4,425,330, Cl. 424-92.000.
Northern Engineering Industries: *See*—
Gould, Deryk S. M., 4,425,087, Cl. 417-414.000.
Northern Telecom Inc.: *See*—
Hillman, Garth D., 4,425,524, Cl. 310-332.000.
Northern Telecom Limited: *See*—
Lee, Pok F.; and Bond, John A., 4,425,483, Cl. 179-170.200.
Northrop Corporation: *See*—
Meuleman, Gaston, 4,424,708, Cl. 73-40.000.
Wes, James A.; and Ottoson, Raymond H., 4,424,944, Cl. 249-3.130.
Novak, Lajos: *See*—
Szantay, Csaba; Novak, Lajos; Aszodi, Jozsef; Simonidesz, Vilmos; Galambos, Geza; Kovacs, Gabor; Virag, Sandor; Stadler, Istvan; and Kormoczy, Peter, 4,425,358, Cl. 424-285.000.
Noyori, Tatsuhiko: *See*—
Asari, Akira; Noyori, Tatsuhiko; Ueda, Masakazu; and Ishii, Takahiko, 4,424,696, Cl. 72-273.500.
Nugent, William P., to Pneumadyne, Inc. Valve construction having enhanced duty cycle. 4,424,831, Cl. 137-627.500.
Numano, Masachika; Akita, Shinji; and Morita, Minoru, to Nippon Kokan Kabushiki Kaisha. Conditioning line for steel pipes. 4,424,616, Cl. 29-33.00T.
Nurmi, Antti L.: *See*—
Konsti, Pentti J.; and Nurmi, Antti L., 4,425,109, Cl. 493-410.000.
Nurminen, Aimo A.: *See*—
Tuovinen, Frans H.; Hokkanen, Pentti O.; Nurminen, Aimo A.; Mustikka, Lauri A.; and Virta, Matti A., 4,424,959, Cl. 266-283.000.
Nuzzi, Francis J.; and Duffy, John K., to Kollmorgen Technologies Corporation. Hole cleaning process for printed circuit boards using permanganate and caustic treating solutions. 4,425,380, Cl. 427-97.000.
Nyari, Laszlo: *See*—
Hecker, Gyula; Kenez, Erno; Nyari, Laszlo; and Patta, Janos, 4,425,608, Cl. 362-291.000.
Nyquist, Gerald A.: *See*—
Millington, Donald L.; and Nyquist, Gerald A., 4,424,829, Cl. 137-590.000.
Oak Industries Inc.: *See*—
Merrell, Richard G., 4,425,579, Cl. 358-86.000.
Oar, Ross C.: *See*—
Barbieri, John J.; and Oar, Ross C., 4,424,610, Cl. 24-163.00K.
Obedineni Zavodi Za Zapametyavashti Ustroystva: *See*—
Kodjabashev, Petko V.; Malinovski, Georgi P.; and Atanassov, Atanas T., 4,425,594, Cl. 360-129.000.
Oce-Nederland B.V.: *See*—
Roodbergen, Sake P., 4,425,034, Cl. 355-3.0BE.
Ochi, Kozo: *See*—
Suzuki, Migaku; Ochi, Kozo; and Igaue, Takamitsu, 4,425,127, Cl. 604-166.000.
Oelbermann, Max, to Rittershaus & Blecher GmbH. Filter plate for filter presses. 4,425,233, Cl. 210-231.000.
Ogasawara, Takahisa: *See*—
Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,425,473, Cl. 549-363.000.
Ogawa, Akira: *See*—
Sugiyama, Masatoshi; Adachi, Keiichi; Kato, Eiichi; Ogawa, Akira; and Imai, Shinichi, 4,425,162, Cl. 106-22.000.
Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Color filter and method for manufacturing the same. 4,425,416, Cl. 430-7.000.
Ogawa, Makoto: *See*—
Tomooka, Keiji; Ogawa, Makoto; and Ishiguro, Hideo, 4,425,512, Cl. 307-138.000.
Ogawa, Masahiko: *See*—
Tamura, Shuichi; Ogawa, Masahiko; Tsunekawa, Tokuichi; and Tokuda, Ryuji, 4,425,031, Cl. 354-403.000.
Oguchi, Shigemitsu: *See*—
Mitsuya, Yasunaga; Hoshiya, Kunio; Oguchi, Shigemitsu; and Kaneko, Reizo, 4,424,974, Cl. 277-80.000.
Oguchi, Toshihiko: *See*—
Ido, Tadashi; Yokoyama, Hirotaka; Wada, Moriyasu; Oguchi, Toshihiko; Ishizawa, Akio; and Koike, Yoshiyasu, 4,425,401, Cl. 428-329.000.
Oh, Hilario L., to General Motors Corporation. Engine with knock sensing using product component of knock vibration signal. 4,424,706, Cl. 73-35.000.
Ohashi, Toshijiro; Yamaguchi, Yasuhiro; Kohno, Michinaga; and Kamita, Nobu, to Hitachi, Ltd. Apparatus for winding wire around toroidal core. 4,424,939, Cl. 242-4.00R.
Ohmori, Takashi: *See*—
Moriguchi, Fujio; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,425,568, Cl. 346-76.0PH.
Ohmura, Jukichi: *See*—
Hamada, Masato; Ohmura, Jukichi; and Muranaka, Fumio, 4,425,199, Cl. 204-59.00F.
Oikawa, Naoyuki; Sato, Wako; and Tanaka, Osamu, to Ichikawa Woolen Textile Co., Ltd. Needle punched papermaking felt and method of manufacturing the same. 4,425,392, Cl. 428-90.000.
Ojima, Juji, to NHK Spring Co., Ltd. Locking mechanism in tension providing device. 4,425,104, Cl. 474-111.000.
Ojima, Kazuo, to Hitachi, Ltd. Turbocharger control system for use in internal combustion engines. 4,424,675, Cl. 60-602.000.
Okada, Satoru: *See*—
Yokoi, Gunpei; and Okada, Satoru, 4,424,967, Cl. 273-1.0GC.
O'Klatner, Charles L.: *See*—
Harper, James R.; and O'Klatner, Charles L., 4,424,744, Cl. 101-349.000.
Okubo, Kozo; Kobata, Yoshihiro; Asakura, Osamu; and Nishikawa, Tatsuo, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Printing device of type ring selection system. 4,424,743, Cl. 101-99.000.
Okuda, Ryoichi: *See*—
Yamamoto, Noboru; Makino, Tomoatsu; Okuda, Ryoichi; and Sakurai, Hiroshi, 4,424,704, Cl. 73-35.000.
O'Lenick, Anthony: *See*—
Lindner, Robert A.; and O'Lenick, Anthony, 4,425,458, Cl. 524-314.000.
Olin Corporation: *See*—
Gray, Thomas J., 4,425,203, Cl. 204-129.000.
Olsen, Randall B., to Power Conversion Technology, Inc. Apparatus and method for pyroelectric power conversion. 4,425,540, Cl. 322-2.00A.
Olympus Optical Co. Ltd.: *See*—
Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, 4,425,636, Cl. 369-44.000.
Sato, Masanobu, 4,424,942, Cl. 242-200.000.
Omark Industries, Inc.: *See*—
Langman, William F.; Diener, Leslie J.; and Clark, Jack, 4,424,935, Cl. 238-349.000.
OMI International Corporation: *See*—
Martin, Sylvia, 4,425,198, Cl. 204-43.00Z.
Omomo, Yoshiro: *See*—
Yokoyama, Akira; Omomo, Yoshiro; Tanaka, Hisashi; and Saji, Hideo, 4,425,319, Cl. 424-1.100.
Ondris, Joseph F.; and Korn, Felix, to Bristol-Myers Company. Display carton and blank therefor. 4,424,897, Cl. 206-45.140.
Ono, Shigeo: *See*—
Mizuno, Kazutoshi; and Ono, Shigeo, 4,424,986, Cl. 280-784.000.
Ono, Taizo: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,425,347, Cl. 424-256.000.
Onoda, Susumu; Kitamura, Haruo; and Kikuchi, Toshio, to Nippon Steel Corporation. Electromagnetic stirring unit for continuous steel casting mould. 4,424,856, Cl. 164-504.000.
Oosaka, Shigenori; and Komura, Tsuneo, to Fuji Photo Film Co., Ltd. Precision positioning method. 4,425,171, Cl. 156-64.000.
Ootsuka, Yoshinori: *See*—
Hattori, Tadashi; Hanaoka, Masanori; Hashiguchi, Yukihide; Ootsuka, Yoshinori; and Yamaguchi, Hiroaki, 4,424,705, Cl. 73-35.000.
Opdebeeck, Johanna P.: *See*—
Norcross, Neil L.; and Opdebeeck, Johanna P., 4,425,330, Cl. 424-92.000.
Oppenheimer, Edgar D., Jr., to Bird Mobiles, Inc. Adjustable flight simulating mobile device. 4,425,388, Cl. 428-16.000.
Optimetrix Corporation: *See*—
Phillips, Edward H.; and Johannsmeier, Karl-Heinz, 4,425,537, Cl. 318-640.000.
O'Regan, Timothy M.: *See*—
Burkum, Merlin E.; and O'Regan, Timothy M., 4,425,541, Cl. 324-51.000.
Oreprep Chemicals, Inc.: *See*—
Andress, Carlos; and Riggs, William F., 4,425,230, Cl. 209-167.000.
Oronzio deNora Impianti Elettrochimici S.p.A.: *See*—
Pellegri, Alberto, 4,425,214, Cl. 204-254.000.
Orr, John R.; and Hoover, Jacob H., Jr., to RCA Corporation. Fixed pulse width, fast recovery one-shot pulse generator. 4,425,514, Cl. 307-265.000.
Ortega, Joseph K. E., to United States of America, Energy. Thermal control system and method for a passive solar storage wall. 4,424,800, Cl. 126-419.000.
Orvos, Peter S.: *See*—
Cunningham, Robert J.; and Orvos, Peter S., 4,425,011, Cl. 308-214.000.
Osberghaus, Rainer: *See*—
Moller, Hinrich; and Osberghaus, Rainer, 4,425,327, Cl. 424-65.000.
Oshinsky, Frank W., to McConway & Torley Corporation. Method of machining a knuckle casting. 4,424,620, Cl. 29-558.000.

Otake, Hideo: *See*—
Yamada, Yasushi; Kunikata, Kenji; and Otake, Hideo, 4,425,270, Cl. 260-153.000.

Otani, Junji; and Matsuhashi, Noriyasu, to Honda Giken Kogyo Kabushiki Kaisha. Inlet for a fuel tank. 4,424,839, Cl. 141-348.000.

Otto Bilz Werkzeugfabrik Kommandit-Gesellschaft: *See*—
Bilz, Reiner; and Fauth, Otto, 4,425,060, Cl. 408-6.000.

Otto, Josef: *See*—
Bauer, Hanns G.; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,425,657, Cl. 373-93.000.

Ottoson, Raymond H.: *See*—
Wes, James A.; and Ottoson, Raymond H., 4,424,944, Cl. 249-3.130.

Outboard Marine Corporation: *See*—
Lassanske, George G.; and Poehlman, Arthur G., 4,425,140, Cl. 48-180.00C.

Outokumpu Oy: *See*—
Tuovinen, Frans H.; Hokkanen, Pentti O.; Nurminen, Aimo A.; Mustikka, Lauri A.; and Virta, Matti A., 4,424,959, Cl. 266-283.000.

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Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,425,147, Cl. 65-27.000.

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Konsti, Pentti J.; and Nurmi, Antti L., 4,425,109, Cl. 493-410.000.

Oy Safematic Ltd.: *See*—
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Paccar Inc.: *See*—
Deacon, David W., 4,424,721, Cl. 74-493.000.

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Killen, Robert H., 4,425,013, Cl. 312-216.000.

Padget, John C.; McAloon, Kevin T.; and Burgess, Anthony J., to Imperial Chemical Industries PLC. Aqueous coating compositions. 4,425,465, Cl. 524-450.000.

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Palma, Horus P., to Shatterproof Glass Corporation. Method and apparatus for producing laminated glass. 4,425,406, Cl. 428-12.000.

Palmer, George N.: *See*—
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Panov, Anatoly F.; Morozov, Vladimir I.; Makarov, Kirill A.; and Rudnev, Alexandr V. Specimen chamber of electron probe instrument. 4,425,507, Cl. 250-442.100.

Papanicolaou, Nicolas A., to Martin Marietta Corporation. Method of fabricating a diamond heat sink. 4,425,195, Cl. 204-3.000.

Papantoniou, Christos: *See*—
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Papp, Maria H.: *See*—
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Patta, Janos: *See*—
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Patterson, Dennis H.: *See*—
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Patterson, Tommy W. Automatic adjustable air baffle. 4,424,799, Cl. 126-289.000.

Paul Alan Magil & Associates: *See*—
Magil, Paul A., 4,425,477, Cl. 179-2.00B.

Paushkin, Evgeny V.: *See*—
Silinsky, Anatoly A.; Schukin, Vitaly S.; and Paushkin, Evgeny V., 4,424,902, Cl. 206-454.000.

Pav, Josef; Lauschner, H. J.; and Gaede, Peter J., to Kleinewefers GmbH. Electromagnetic heating system for calender rolls or the like. 4,425,489, Cl. 219-10.49A.

Pavlik, Norman M.; and Sefko, John, to Westinghouse Electric Corp. Low temperature cure interlaminar coating. 4,425,166, Cl. 106-286.200.

Payton, Donald G., Jr., to Sperry Corporation. Thermally energized packer cup. 4,424,865, Cl. 166-302.000.

Peacock, Donald G.: *See*—
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Pearson, Donald L. Toothpaste dispenser. 4,424,916, Cl. 222-74.000.

Pearson, James H.: *See*—
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Pearson, Richard K.; and Hirschfeld, Tomas B., to United States of America, Energy. Minimally refined biomass fuel. 4,425,136, Cl. 44-51.000.

Peiffer, Dennis G.: *See*—
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Pellegata, Renato; and Gandolfi, Carmelo, to Farmitalia Carlo Erba. Fluoro-prostaglandins and process for their preparation. 4,425,359, Cl. 424-305.000.

Pellegri, Alberto, to Oronzio deNora Impianti Elettrochimici S.p.A. Novel bipolar electrolyzer. 4,425,214, Cl. 204-254.000.

Pennington, Charles E., to Emhart Industries, Inc. Anchoring device and method for securing a capacitor to a printed circuit board. 4,424,626, Cl. 29-839.000.

Penny, Glenn S.; and Briscoe, James E., to Halliburton Company. Methods of increasing hydrocarbon production from subterranean formations. 4,425,242, Cl. 252-8.55R.

Peppers, Henry J., to Imperial Clevite Inc. Tube bender construction. 4,424,699, Cl. 72-388.000.

Perahia, Avraham, to Pertec Computer Corporation. Linear motor velocity sensor. 4,425,534, Cl. 318-135.000.

Perard Engineering Ltd.: *See*—
Jackson, Eric A.; and Turner, George M., 4,424,722, Cl. 74-422.000.

Perigo, John A.; and Divall, John E., to Metal Box Limited. Method and apparatus for producing a sterilizable package of a product, and the packaged product. 4,424,659, Cl. 53-425.000.

Perineau, Serge M.: *See*—
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Perkin-Elmer Corporation, The: *See*—
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Mount, Bruce E., 4,425,526, Cl. 310-800.000.
Mueller, William C.; and Plunkett, Larry, 4,425,571, Cl. 346-136.000.
Quinn, Peter W., 4,425,075, Cl. 414-755.000.

Perkins, Eugene. Heating device. 4,424,797, Cl. 126-247.000.

Perkins, Neale A., to Safariland Ltd., Inc. Holster with mounting spring. 4,424,924, Cl. 224-252.000.

Perol, Claude: *See*—
Kaplan, Murray A.; Bouzard, Daniel; Perol, Claude; Stemer, Jacques; and Weber, Abraham, 4,425,348, Cl. 424-257.000.

Perron, Ralph A.: *See*—
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Perry, David A.; and Stead, Peter, to Ventrex Laboratories, Inc. Method and apparatus for carrying out solid phase in vitro diagnostic assays. 4,425,320, Cl. 424-1.100.

Pertec Computer Corporation: *See*—
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Pesch, Jurgen; Knoll, Gunter; and Thelen, Werner, to G. Siempelkamp GmbH & Co. Apparatus for the manipulation of press mats. 4,424,895, Cl. 198-472.000.

Pesch, Wolfgang: *See*—
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Petcavich, Robert J. Anti-static packages and packaging material. 4,424,900, Cl. 206-328.000.

Peterson, Daniel G.; and Erickson, John W., to Kobe, Inc. Velocity actuated valve for a downhole pump. 4,425,083, Cl. 417-56.000.

Peterson, Daniel G.; and Erickson, John W., to Kobe, Inc. Combined surface power unit and velocity actuated valve for a downhole pump. 4,425,086, Cl. 417-388.000.
Petz, Georg: *See*—
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Pezzi, Giovanni, to Sasib S.p.A. Method and device for the electropneumatical testing of the air permeability of cigarettes. 4,424,707, Cl. 73-38.000.
Pfeiffer, Dennis G.: *See*—
Walker, Thad O.; Turner, S. Richard; Lundberg, Robert D.; Thaler, Warren A.; and Pfeiffer, Dennis G., 4,425,463, Cl. 524-400.000.
Pfeil, Friedrich: *See*—
Popp, Hanns-Peter; Pfeil, Friedrich; and Schmidt, Eberhard, 4,425,651, Cl. 372-61.000.
Philbrook, Kenneth C.: *See*—
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Philip, Alexander S.; and Maddern, Thomas S., to Plessey Company plc, The. Telecommunications switching network using digital switching modules. 4,425,640, Cl. 370-58.000.
Philip, Alexander S.: *See*—
French, Joseph A.; Maddern, Thomas S.; and Philip, Alexander S., 4,425,641, Cl. 370-64.000.
Phillips, Edward H.; and Johannsmeier, Karl-Heinz, to Optimetrix Corporation. X-Y Addressable workpiece positioner and mask aligner using same. 4,425,537, Cl. 318-640.000.
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Casperson, John R., 4,425,144, Cl. 55-96.000.
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Swanson, Billy L., 4,425,241, Cl. 252-8.50C.
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Physio-Control Corporation: *See*—
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Piasek, Edmund J., deceased: *See*—
Cahill, Paul J.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administratrix, 4,425,245, Cl. 252-33.000.
Cahill, Paul J.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administrator, 4,425,249, Cl. 252-51.50R.
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Pieper, Henner: *See*—
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Piotrowski, Alfred B.; and Davis, Robert H., to Mobil Oil Corporation. Water soluble lubricant compositions. 4,425,248, Cl. 252-49.300.
Pissiotas, Georg; and Rempfler, Hermann, to Ciba-Geigy Corporation. Pyridyl-2-oxyphenyloxime derivatives, and their use as herbicides. 4,425,156, Cl. 71-94.000.
Pitchford, Alan G., to Syntex (U.S.A.) Inc. Treatment of menopausal symptoms. 4,425,339, Cl. 424-239.000.
Planche, Jean P., to La Telemecanique Electrique. Device for simulating an instantaneous temperature-rise of a semiconductor component in order to protect same. 4,425,624, Cl. 364-802.000.
Plener, Joachim: *See*—
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Plessey Company plc, The: *See*—
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Plessner, Jac A. Heater box for use as an improved portable soldering furnace unit. 4,424,795, Cl. 126-237.000.
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Pneumadyne, Inc.: *See*—
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Poehlman, Arthur G.: *See*—
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Pohl, Karl-Heinz, to Siemon Company, The. Multiple electrical connector block with wire wrap pins. 4,425,019, Cl. 339-198.00R.
Polanski, Zbigniew; and Moszumanski, Ryszard, to Politechnika Krakowska. Hydraulic supply system of a pulsatory press. 4,424,673, Cl. 60-486.000.
Polaroid Corporation: *See*—
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Porter, Gary N. Internal combustion engine valve actuating cam. 4,424,772, Cl. 123-65.0VB.
Portmann, Hubert, to Asulab, S.A. Liquid crystal display cell having capacitance compensation. 4,425,027, Cl. 350-331.00T.
Postma, Lambertus, to U.S. Philips Corporation. Magnetoresistive head. 4,425,593, Cl. 360-113.000.
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Prince, Edgar D., to Prince Corporation. Molding machine. 4,425,091, Cl. 425-589.000.
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Prodo, Kenneth W.: *See*—
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Pruden, Samuel H.; and Kunz, James B., to Cushman Industries, Incorporated. Wedge chuck. 4,424,977, Cl. 279-121.000.
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Raczynski, Wladyslaw, to Framatome. Centrifugal pump with dismountable diffuser. 4,425,081, Cl. 415-211.000.
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Rhodes, James S.: *See—*
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Rice, Warren; and Hosterman, Craig, to Natural Energy Systems. Hydraulic refrigeration system and method. 4,424,681, Cl. 62-114.000.
Richardson, Donald J. Fishing rod handle and fastener. 4,424,639, Cl. 43-18.100.
Richmond, William R., to Williams Industries, Inc. Packet holder. 4,424,906, Cl. 211-50.000.
Richter, Eike: *See—*
Rosenberry, George M., Jr.; Mallick, John A.; and Richter, Eike, 4,425,521, Cl. 310-214.000.
Ricoh Company, Ltd.: *See—*
Kawanishi, Toshiyuki; and Tabata, Yukio, 4,425,569, Cl. 346-76.0PH.
Tajima, Syouji, 4,425,382, Cl. 427-203.000.
Riebel, Hans-Jochem: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,425,282, Cl. 260-465.00D.
Rieder, Peter; and Schurmann, Robert, to Volpi AG. Cavity illuminating device. 4,425,599, Cl. 362-32.000.
Riederauer, Szilard: *See—*
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.
Riggenbach, David R.: *See—*
Bryant, Roger A.; and Riggenbach, David R., 4,425,010, Cl. 308-227.000.
Riggs, Arthur D., to Genentech, Inc. Microbial polypeptide expression vehicle. 4,425,437, Cl. 435-317.000.
Riggs, William F.: *See—*
Andress, Carlos; and Riggs, William F., 4,425,230, Cl. 209-167.000.
Riley, Wayne C.: *See—*
Wicke, Charles A.; and Riley, Wayne C., 4,424,767, Cl. 122-13.00A.
Rilly, Gerard: *See—*
Colineau, Joseph; and Rilly, Gerard, 4,425,533, Cl. 315-408.000.
Rist, Guenter: *See—*
Lohmann, Dieter; d'Hondt, Christian; and Rist, Guenter, 4,425,361, Cl. 424-309.000.
Ristow, Dietrich, to Siemens Aktiengesellschaft. Metal-semiconductor-field effect transistor (MESFET) with lightly doped drain contact region for higher voltage breakdown. 4,425,573, Cl. 357-22.000.
Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, to Lever Brothers Company. Oral compositions. 4,425,325, Cl. 424-54.000.
Rittershaus & Blecher GmbH: *See—*
Oelbermann, Max, 4,425,233, Cl. 210-231.000.
Rittmann, Friedrich: *See—*
Bauer, Hanns G.; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,425,657, Cl. 373-93.000.
RIV-SKF Officine di Villar Perosa, SpA: *See—*
Ferrero, Daniele, 4,424,774, Cl. 123-90.560.
Rizzo, Salvatore P., to Texas Instruments Incorporated. Attachable, circuit-terminating, circuit board edge member. 4,425,015, Cl. 339-17.0LC.
Robb, Barry L. Fishing tackle storage rack. 4,424,907, Cl. 211-60.00R.
Robbins, Donald A., to United Technologies Corporation. Axial flexible radially stiff retaining ring for sealing in a gas turbine engine. 4,425,078, Cl. 415-135.000.
Roberts, David: *See—*
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, 4,425,390, Cl. 428-43.000.
Roberts, Derek A.: *See—*
Speak, Trevor H.; Kernon, John D.; and Roberts, Derek A., 4,425,079, Cl. 415-139.000.
Robertson, Johnye M. Interior window covering. 4,424,849, Cl. 160-124.000.
Robinson, Merrill G., to Shatterproof Glass Corporation. Gas distribution system for sputtering cathodes. 4,425,218, Cl. 204-298.000.
Rockwell International Corporation: *See—*
Holly, Sandor, 4,425,648, Cl. 372-20.000.
Russell, Jeffrey D., 4,425,623, Cl. 364-786.000.
Rod, Robert L.: *See—*
Kroger, Ferdinand A.; Rod, Robert L.; Panicker, Ramachandra M. P.; and Knaster, Mark B., 4,425,194, Cl. 204-2.100.
Rodacker, Wayne: *See—*
Carmichael, William E.; and Rodacker, Wayne, 4,425,004, Cl. 301-8.000.
Rohm and Haas Company: *See—*
Emmons, William D.; and Stevens, Travis E., 4,425,469, Cl. 524-750.000.
Rohner, Joachim; Zumfeld, Heinz; Mauries, Reinhard; and Preuhs, Hans-Jurgen, to W. Schlafhorst & Co. Thread splicing device. 4,424,663, Cl. 57-22.000.
Rolls-Royce Limited: *See—*
Speak, Trevor H.; Kernon, John D.; and Roberts, Derek A., 4,425,079, Cl. 415-139.000.
Stanton, William A.; Hazlewood, Jonathan; and Kerridge, Norman A., 4,425,080, Cl. 415-197.000.
Rolstad, Erik; and Smith, Robert D., to Scandpower, Inc. Gamma ray thermometer for boiling water reactor. 4,425,297, Cl. 376-247.000.

Rood, Allan J.: *See*—
Bartholet, Michael A.; Cochran, James L.; Janssen, Donovan M.; Magno, Robert; Rood, Allan J.; Seaward, William S.; and Walker, Lance A., 4,424,963, Cl. 270-53.000.

Roodbergen, Sake P., to Oce-Nederland B.V. System for suppressing vibrations of a photoconductive belt in a processing zone of an electrostatic copying machine. 4,425,034, Cl. 355-3.0BE.

Rosch, Michael: *See*—
Bruttel, Beat; Schneider, Hanajorg; Millioud, Alain; and Rosch, Michael, 4,425,134, Cl. 8-524.000.

Rose, Hans-Gunter: *See*—
Graf, Werner; Frey, Volker; and Rose, Hans-Gunter, 4,425,387, Cl. 427-341.000.

Rosenberg, Sheldon J., to Western Electric Co., Inc. Instrument carrying case. 4,424,899, Cl. 206-305.000.

Rosenberry, George M., Jr.; Mallick, John A.; and Richter, Eike, to General Electric Company. Magnetic slot wedge with low average permeability and high mechanical strength. 4,425,521, Cl. 310-214.000.

Rosevear, Alan, to United Kingdom Atomic Energy Authority. Immobilization of biologically active substances. 4,425,434, Cl. 435-176.000.

Roth, Ernest R., to Biohol Corporation. Alcohol and fuel production. 4,425,137, Cl. 44-56.000.

Rothchild, Ronald D. Inexpensive method of recovering condensable vapors with a liquified inert gas. 4,424,680, Cl. 62-48.000.

Rousseau, Raymond, to Fichet-Bauche. Bramah or pin lock. 4,424,692, Cl. 70-363.000.

Roussel UCLAF: *See*—
Guillemette, Armand; and Francois, Abel, 4,425,274, Cl. 260-397.100.

Royer, James R.: *See*—
Tateosian, Louis H.; Royer, James R.; and Eden, George T., 4,425,094, Cl. 433-228.000.

Rubber Millers Inc.: *See*—
Day, John T., 4,424,938, Cl. 241-182.000.

Rudnev, Alexandr V.: *See*—
Panov, Anatoly F.; Morozov, Vladimir I.; Makarov, Kirill A.; and Rudnev, Alexandr V., 4,425,507, Cl. 250-442.100.

Ruhrchemie Aktiengesellschaft: *See*—
Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Dohren, Hans, 4,425,139, Cl. 48-77.000.

Rumayor-Aguirre, Hugo; Gomez-Sanchez, Abel; and Viramontes-Romo, Jesus, to Cristaleria, S.A. Process and machine for simultaneously cutting off excess ends of hollow glass, plastic or similar articles. 4,424,925, Cl. 225-2.000.

Rummel, Mitzie K.: *See*—
Concannon, Thomas P.; and Rummel, Mitzie K., 4,425,448, Cl. 523-218.000.

Russell, Jeffrey D., to Rockwell International Corporation. Lookahead carry circuit apparatus. 4,425,623, Cl. 364-786.000.

Rutgerswerke Aktiengesellschaft: *See*—
Neunhoeffer, Otto; Wilhelm, Gerhard; Hockenberger, Lothar; Bergmann, Franz J.; and Endruscheit, Peter, 4,425,236, Cl. 210-638.000.
Schollhorn, Wolf-Dietrich; and Hockenberger, Lothar, 4,425,389, Cl. 428-34.000.

Rutges, Antonius A.; Mertens, Ludovicus M.; and Van Grasdorff, Maurits W., to AGFA-GEVAERT N.V. Process for the production of a laminar article and such article containing information in a hydrophilic colloid stratum. 4,425,421, Cl. 430-238.000.

Ruthenberg, Meyer L.: *See*—
Wilson, Evearist B.; and Ruthenberg, Meyer L., 4,425,068, Cl. 414-36.000.

Ruti-Te Strake B.V.: *See*—
Wagenmakers, Harry, 4,424,835, Cl. 139-1.00E.

Ryan, Raymond W., Jr.: *See*—
Altland, Henry W.; Ryan, Raymond W., Jr.; Senise, Phillip P., Jr.; and Lindstrom, Michael J., 4,425,424, Cl. 430-270.000.

Ryder, Gregory P. Telescopic ski pole assembly. 4,424,987, Cl. 280-823.000.

Saeki, Keiji; Ikeda, Junji; and Tamotsu, Wakahata, to Matsushita Electric Industrial Co., Ltd. Photosetting resin compositions. 4,425,209, Cl. 204-159.230.

Safariland Ltd., Inc.: *See*—
Perkins, Neale A., 4,424,924, Cl. 224-252.000.

Saito, Kiyotaka: *See*—
Tanaka, Hideyuki; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,425,258, Cl. 502-154.000.

Saito, Takashi, to Takashi Saito/Iwasaki Denko Company, Ltd. Finger ring. 4,424,689, Cl. 63-15.100.

Saji, Hideo: *See*—
Yokoyama, Akira; Omomo, Yoshiro; Tanaka, Hisashi; and Saji, Hideo, 4,425,319, Cl. 424-1.100.

Sakaguchi, Seiichiro: *See*—
Yamazaki, Haruyuki; Akatsu, Yasuaki; and Sakaguchi, Seiichiro, 4,424,770, Cl. 122-488.000.

Sakai, Kuniaki: *See*—
Tsubakihara, Osamu; Kameyama, Kazuhide; Takahama, Hideyuki; Sakai, Kuniaki; and Tsuneoka, Akira, 4,424,855, Cl. 164-485.000.

Sakamoto, Kenshi; and Doi, Akira, to Fuji Oil Company, Ltd. Cheese-containing composition for dessert making and process for producing the same. 4,425,369, Cl. 426-582.000.

Sakane, Kazuo: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,425,340, Cl. 424-246.000.

Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Sato, Jun; Ozawa, Kiyomi; Hirose, Masayoshi; and Hirata, Kiminori, to Nissan Chemical Industries, Ltd. Benzoazine ether or thioether linkage containing urea compounds, process for producing same and insecticides containing said compounds. 4,425,343, Cl. 424-250.000.

Sakurai, Hiroshi: *See*—
Yamamoto, Noboru; Makino, Tomoatsu; Okuda, Ryoichi; and Sakurai, Hiroshi, 4,424,704, Cl. 73-35.000.

SAME S.p.A.: *See*—
Sonzogni, Franco, 4,424,879, Cl. 180-255.000.

Samokhvalov, Jury I.; Kim, Vladimir A.; and Golovkin, Engels K., to Vsesojuzny Nauchno-Issledovatelsky I Konstruktorsky Institut Po Oborudovaniju Dlya Shinnoi Promyshlennosti. Tire casing assembly drum. 4,425,180, Cl. 156-415.000.

Sampson, Earl W.: *See*—
Sampson, Norma A.; and Sampson, Earl W., 4,425,120, Cl. 604-198.000.

Sampson, Norma A.; and Sampson, Earl W. Shielded hypodermic syringe. 4,425,120, Cl. 604-198.000.

Samson, Wilfred: *See*—
Spector, Kenneth A.; Samson, Wilfred; and DeMello, Richard M., 4,424,833, Cl. 137-849.000.

Sanders, John L.: *See*—
Pousette, Ronald D.; and Sanders, John L., 4,424,840, Cl. 144-246.00F.

Sandoz Ltd.: *See*—
Berthold, Richard; and Louis, William J., 4,425,362, Cl. 424-322.000.

Sandvik, Erik I.: *See*—
Holzwarth, George M.; Naslund, Lars A.; and Sandvik, Erik I., 4,425,246, Cl. 252-8.55D.

Sankyo Electric Company Limited: *See*—
Hiraga, Masaharu, 4,425,520, Cl. 310-92.000.

Sansui Electric Co., Ltd.: *See*—
Suzuki, Masao; and Fujimoto, Yasuhiro, 4,425,638, Cl. 369-265.000.

Santen Pharmaceutical Co., Ltd.: *See*—
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,425,333, Cl. 424-177.000.

Santer, J. Owen; and Spitz, George T., to Monsanto Company. Coating compositions comprising a methylated methylolated melamine. 4,425,466, Cl. 524-512.000.

Sanwa Denpun Industrial Co., Ltd.: *See*—
Nakata, Kojiro; Endo, Yasunobu; Terada, Akitomo; Hayashi, Kazumasa; and Kobori, Michio, 4,425,452, Cl. 524-47.000.

Sanyo Electric Co., Ltd.: *See*—
Hosoya, Nobukazu, 4,425,576, Cl. 358-21.00V.

Sanyo-Kokusaku Pulp Co., Ltd.: *See*—
Shibano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, 4,425,176, Cl. 156-244.110.

Sapkus, Jurgis; Clarke, Charles D.; Lewis, J. Stephen; and Mills-Winkler, James P., to Mattel, Inc. Winking apparatus for figure toy. 4,424,644, Cl. 46-135.00R.

Sapone, Martin: *See*—
Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, 4,425,325, Cl. 424-54.000.

Sarin, Vinod K.: *See*—
Buljan, Sergej-Tomislav; and Sarin, Vinod K., 4,425,141, Cl. 51-309.000.

Sasaki, Toshihiro; Ikehata, Hiromi; and Fukumoto, Ryoichi, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Window pane supporter in motor car. 4,424,647, Cl. 49-502.000.

Sasakura, Toyoki: *See*—
Iino, Hiroshi; and Sasakura, Toyoki, 4,425,634, Cl. 367-120.000.

Sasaya, Osamu; Nishizawa, Masahiro; Yokomizo, Hiroshi; Miura, Kiyoshi; and Tomita, Yoshifumi, to Hitachi, Ltd. Photosensitive composition. 4,425,419, Cl. 430-179.000.

Sasazawa, Tatsuya: *See*—
Iwaki, Akio; Nishijima, Toyoki; Iijima, Akio; and Sasazawa, Tatsuya, 4,425,418, Cl. 430-106.000.

Sasib S.p.A.: *See*—
Pezzi, Giovanni, 4,424,707, Cl. 73-38.000.

Sasscer, Lawrence D.: *See*—
Swenson, Robert E.; Sasscer, Lawrence D.; and Pusic, Vladi, 4,425,615, Cl. 364-200.000.

Sato, Akira; and Waki, Tatsuo, to Lonseal Corporation. Process for producing open cell foam and foamable compound. 4,425,442, Cl. 521-93.000.

Sato, Hideaki: *See*—
Matsumoto, Kazuya; Yamaguchi, Isao; Tsuji, Takao; and Sato, Hideaki, 4,425,023, Cl. 350-96.140.

Sato, Jun: *See*—
Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Sato, Jun; Ozawa, Kiyomi; Hirose, Masayoshi; and Hirata, Kiminori, 4,425,343, Cl. 424-250.000.

Sato, Koji; Kato, Tadao; and Kawano, Hikaru, to Musashi Co., Ltd.; and Hitachi Denshi Engineering Kabushiki Kaisha. Apparatus for binding paper sheets. 4,424,660, Cl. 53-540.000.

Sato, Masanobu, to Olympus Optical Company Limited. Rewind device. 4,424,942, Cl. 242-200.000.

Sato, Wako: *See*—
Oikawa, Naoyuki; Sato, Wako; and Tanaka, Osamu, 4,425,392, Cl. 428-90.000.

Satou, Kouzou, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric circuit breaker. 4,425,596, Cl. 361-93.000.

Saur, Charles; and DeMan, Samuel J., to Lear Siegler, Inc. Transport for loading semitrailers and the like. 4,425,069, Cl. 414-398.000.

Sava, Robert J.: *See—*
Halliburton, Ronald D.; Pearson, James H.; and Sava, Robert J., 4,424,970, Cl. 273-121.00A.
Savkin, Valentin G.: *See—*
Bely, Vladimir A.; Sviridenok, Anatoly I.; Savkin, Valentin G.; Meshkov, Vladimir V.; and Myshkin, Nikolai K., 4,425,247, Cl. 252-12.000.
Saytech, Inc.: *See—*
Williams, David O., 4,425,447, Cl. 521-132.000.
Scalese, Joseph J. Eddy current probe calibration standard. 4,425,545, Cl. 324-202.000.
Scandpower, Inc.: *See—*
Rolstad, Erik; and Smith, Robert D., 4,425,297, Cl. 376-247.000.
Scarnato, Thomas J.: *See—*
Sorensen, Robert; Barrett, Edward A.; and Scarnato, Thomas J., 4,425,058, Cl. 406-100.000.
Scarola, Leonard S.: *See—*
Kurtz, Stuart J.; Scarola, Leonard S.; and Miller, John C., 4,425,044, Cl. 366-79.000.
Schafer, Ewald; and Jung, Harald, to Karl Otto Braun KG. Wide bandage fabric. 4,424,808, Cl. 128-156.000.
Scheer, Lawrence E., to United States of America, Army. Wheel deceleration sensor. 4,424,712, Cl. 73-514.000.
Schempp, Heinrich: *See—*
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,425,151, Cl. 71-88.000.
Scherbner, Paul J.: *See—*
Goldstein, Sherwood; McClelland, Henry T.; and Scherbner, Paul J., 4,425,168, Cl. 148-2.000.
Scheve, Heinrich: *See—*
Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Dohren, Hans, 4,425,139, Cl. 48-77.000.
Schiff, Jonathan D.: *See—*
Schoendorfer, Donald W.; Lueptow, Richard M.; and Schiff, Jonathan D., 4,425,114, Cl. 604-7.000.
Schiff, Saul, to United States of America, Army. Segmented seal for discarding sabot ammunition. 4,424,748, Cl. 102-523.000.
Schilling, Hans-Dieter; and Grabenhorst, Ulrich, to Bergwerksverband GmbH. Fluidized bed reactor for particulate material. 4,425,303, Cl. 422-142.000.
Schippers, Heinz: *See—*
Bauer, Karl; Schippers, Heinz; and Dammann, Peter, 4,424,664, Cl. 57-338.000.
Schirmer, Henry G., to W. R. Grace & Co., Cryovac Division. Manifolds for strutted film. 4,425,172, Cl. 156-187.000.
Schlegel, Hans-Joachim, to Inprohold Establishment. Posterior chamber implant lens. 4,424,597, Cl. 3-13.000.
Schlumberger Technology Corporation: *See—*
McGill, Howard L., 4,424,860, Cl. 166-113.000.
Schmelz, Helmut: *See—*
Hanke, Leopold; and Schmelz, Helmut, 4,425,556, Cl. 338-25.000.
Schmidt, Eberhard: *See—*
Popp, Hanns-Peter; Pfeil, Friedrich; and Schmidt, Eberhard, 4,425,651, Cl. 372-61.000.
Schmidt, Felix H.: *See—*
Wolff, Hans P.; Heerdt, Ruth; Hubner, Manfred, deceased; Kuhnle, Hans; and Schmidt, Felix H., 4,425,360, Cl. 424-309.000.
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Paliard, Maurice, to Creusot-Loire Enterprises; Lafarge Coppee; Folliot, Albert; and Metallgesellschaft AG. Method of producing cement clinker. 4,425,163, Cl. 106-100.000.
Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Dohren, Hans, to Ruhrchemie Aktiengesellschaft. Apparatus for sluicing residues from the pressure system of a pressure gasification tank. 4,425,139, Cl. 48-77.000.
Schmidt, Walter, to Contraves AG. Liquid crystal display comprising an encapsulation and a liquid crystal display cell with poly-paraxylene and a method of manufacturing the same. 4,425,030, Cl. 350-339.00R.
Schneider, Fred J.: *See—*
Becker, Alan R.; Monahan, Jack J.; and Schneider, Fred J., 4,425,074, Cl. 414-736.000.
Schneider, Hansjorg: *See—*
Bruttel, Beat; Schneider, Hansjorg; Millioud, Alain; and Rosch, Michael, 4,425,134, Cl. 8-524.000.
Schoendorfer, Donald W.; Lueptow, Richard M.; and Schiff, Jonathan D., to Haemonetics Corporation. Blood donation unit. 4,425,114, Cl. 604-7.000.
Schoenewolf, Holger, to Siemens Aktiengesellschaft. Device for monitoring the concentration of an air-vapor mixture. 4,424,702, Cl. 73-24.000.
Schoenewolf, Holger: *See—*
Winter, Hans; Mair, Eduard; and Schoenewolf, Holger, 4,424,703, Cl. 73-24.000.
Schoettle, Klaus; Flohr, Joachim; and Maerthesheimer, Rolf, to BASF Aktiengesellschaft. Tape transport apparatus having a central capstan. 4,424,941, Cl. 242-192.000.
Schollhorn, Wolf-Dietrich; and Hockenberger, Lothar, to Rutgerswerke Aktiengesellschaft. Heat-applicable and hardenable sealing compositions and its use. 4,425,389, Cl. 428-34.000.
Scholz, Dankmar: *See—*
Hesse, Anton; Scholz, Dankmar; and Nicolaus, Walter, 4,425,287, Cl. 264-22.000.
Scholz-Weigl, Sigrid: *See—*
Beck, Rudolf; and Scholz-Weigl, Sigrid, 4,425,266, Cl. 252-548.000.
Scholz, Werner, to Licentia Patent-Verwaltungs-GmbH. PCM Signal system. 4,425,644, Cl. 371-40.000.
Schott, Donald E., to Thomas C. Wilson, Inc. Apparatus for cutting tubes and the like. 4,424,629, Cl. 30-105.000.
Schramm, Wayne E. Electronic locking method and apparatus. 4,425,597, Cl. 361-172.000.
Schroder, Rolf: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,425,282, Cl. 260-465.00D.
Schukin, Vitaly S.: *See—*
Silinsky, Anatoly A.; Schukin, Vitaly S.; and Paushkin, Evgeny V., 4,424,902, Cl. 206-454.000.
Schurmann, Robert: *See—*
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Schuster, Otto: *See—*
Hugemann, Berhhard; and Schuster, Otto, 4,425,117, Cl. 604-93.000.
Schwake, William O. Teaching tool with RF switching. 4,425,096, Cl. 434-201.000.
Schwartz, Henry L.: *See—*
Havlice, James F.; Waxman, Albert S.; Schwartz, Henry L.; and Stepner, David E., 4,424,813, Cl. 128-660.000.
Schwartz, Paul M.; and Chu, James C., to Sperry Corporation. Fin line circuit for detecting R.F. wave signals. 4,425,549, Cl. 329-161.000.
Schweizerische Eidgenossenschaft Vertreten Durch Die Gruppe Fur Rustungsdienste: *See—*
Degen, Max, 4,424,733, Cl. 89-1.50R.
Schweppe, Darrell L.; and Siegl, Hermann K., to Corporation For Public Broadcasting. System for overlaying a computer generated video signal on an NTSC video signal. 4,425,581, Cl. 358-148.000.
Scott, Lindsey V.: *See—*
Horlington, Michael; and Scott, Lindsey V., 4,425,345, Cl. 424-251.000.
Scott Paper Company: *See—*
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Sealed Air Corporation: *See—*
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Seaward, William S.: *See—*
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Sebag, Henri: *See—*
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Sebestyen, Gyula: *See—*
Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Sumeghy, Zoltan, 4,425,349, Cl. 424-258.000.
Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See—*
Jones, Walter T., 4,425,170, Cl. 149-109.600.
Secrist, John L.: *See—*
Berkowitz, Daniel; Bennett, Alan B.; Secrist, John L.; and Milette, Debra A., 4,425,367, Cl. 426-89.000.
Secunda, Jeffrey. Perfusion ratio detector. 4,424,814, Cl. 128-663.000.
Sefko, John: *See—*
Pavlik, Norman M.; and Sefko, John, 4,425,166, Cl. 106-286.200.
Seimex, S.A.: *See—*
Pons Pons, Bartolome, 4,425,302, Cl. 422-125.000.
Seipenbusch, Jurgen: *See—*
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Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, to Continental Gummi-Werke Aktiengesellschaft. Tread configuration for pneumatic vehicle tires. 4,424,846, Cl. 152-209.00R.
Sekiguchi, Katsumi: *See—*
Kawai, Yoichi; Nakamura, Yoshiro; Gotoh, Yoshihisa; Maki, Masami; Yokote, Sachio; and Sekiguchi, Katsumi, 4,425,262, Cl. 252-511.000.
Sekimoto, Kunio; Yamamoto, Katsuhiko; Yamamitsu, Chojuro; and Kurashina, Kozo, to Matsushita Electric Industrial Company, Limited. Video tape recorder immune to third-order distortion noise. 4,425,585, Cl. 358-328.000.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Epoxy-phosphate aqueous dispersions. 4,425,451, Cl. 523-414.000.
Seligman, Lawrence; and Perron, Ralph A., to Data General Corporation. Diagnostic display terminal system. 4,425,625, Cl. 364-900.000.
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Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,425,147, Cl. 65-27.000.
Senise, Phillip P., Jr.: *See—*
Altland, Henry W.; Ryan, Raymond W., Jr.; Senise, Phillip P., Jr.; and Lindstrom, Michael J., 4,425,424, Cl. 430-270.000.
Sexsmith, Frederick H.: *See—*
Howard, Dennis D.; and Sexsmith, Frederick H., 4,425,472, Cl. 526-301.000.
Seyffert, Michael: *See—*
Laverty, Gerald; Kalin, August; and Seyffert, Michael, 4,425,213, Cl. 204-202.000.
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Shanks, Bruce E.; and Marella, Joseph P., to General Electric Company. Sealed beam lamp unit. 4,425,606, Cl. 362-267.000.

Shanks, Bruce E., to General Electric Company. Sealed beam lamp unit. 4,425,607, Cl. 362-267.000.
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Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, 4,425,029, Cl. 350-338.000.
Matsuda, Kumehiko; and Yamamoto, Hachizou, 4,425,619, Cl. 364-405.000.
Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; and Wada, Tomio, 4,425,572, Cl. 357-4.000.
Shatterproof Glass Corporation: *See*—
Palma, Horus P., 4,425,406, Cl. 428-12.000.
Robinson, Merrill G., 4,425,218, Cl. 204-298.000.
Shelby, Billy L.; and Moore, William C., to International Telephone and Telegraph Corporation. Latch mechanism for luminaire. 4,424,993, Cl. 292-128.000.
Shell Oil Company: *See*—
Bloembergen, Roel; and Verhave, Jan A., 4,425,440, Cl. 521-54.000.
Brownscombe, Thomas F., 4,425,384, Cl. 427-221.000.
Fletcher, Robert A., 4,425,459, Cl. 524-371.000.
Tiedemann, James B., 4,425,055, Cl. 405-217.000.
Shelly, Randolph D. W., to Sperry Corporation. Forced load sharing circuit for inverter power supply. 4,425,613, Cl. 363-26.000.
Shepard, Kenneth L.: *See*—
Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; and Varga, Sandor L., 4,425,269, Cl. 260-112.50R.
Shepherd, Robert C.: *See*—
Butterworth, George A. M.; Elias, Robert T.; Miller, Wayne D.; and Shepherd, Robert C., 4,425,126, Cl. 604-366.000.
Sherman, David L., to Atari, Inc. Method and apparatus for generating line segments and polygonal areas on a raster-type display. 4,425,559, Cl. 340-747.000.
Sherman, David N.; and Verma, Shiv P., to Bell Telephone Laboratories, Incorporated. Multiport programmable digital data set. 4,425,664, Cl. 375-8.000.
Sherwood, David L., to RCA Corporation. High-speed data sorter. 4,425,617, Cl. 364-200.000.
Sherwood Medical Company: *See*—
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Shibano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, to Sanyo-Kokusaku Pulp Co., Ltd. Pressure sensitive adhesive products and the method for preparation of the same. 4,425,176, Cl. 156-244.110.
Shields, Edward P., to Westinghouse Electric Corp. Baffle maintenance apparatus. 4,425,298, Cl. 376-249.000.
Shimek, Daniel C.: *See*—
Shimek, Ronald J.; and Shimek, Daniel C., 4,424,792, Cl. 126-80.000.
Shimek, Ronald J.; and Shimek, Daniel C. Induced draft system for residential heaters. 4,424,792, Cl. 126-80.000.
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Shimoi, Yoichi; Akune, Mikio; Akimoto, Tamotsu; and Watanabe, Ryuzo, to Nittetu Chemical Engineering Ltd. Packing material unit. 4,425,285, Cl. 261-95.000.
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Kawamoto, Fumiaki; Tanaka, Shozo; and Honma, Yoshihiro, 4,425,277, Cl. 260-410.90N.
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Shinno, Koji, to Terumo Corporation. Medical bag and method of manufacturing the same. 4,425,177, Cl. 156-272.200.
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Allen, James A.; and Shipley, Randall S., 4,425,464, Cl. 524-400.000.
Shiraishi, Isao; and Asou, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for manufacturing a bulb. 4,425,100, Cl. 445-67.000.
Shiratori, Harunori; Kikuchi, Kenichi; and Moriya, Yoshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Alignment adjusting device for vehicle. 4,424,984, Cl. 280-661.000.
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Kawamura, Teruaki; Nishimura, Tadashi; Akagi, Kazuo; and Shitamatsu, Ryujiro, 4,425,062, Cl. 408-28.000.
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Showa Manufacturing Co., Ltd.: *See*—
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Shutov, Gennady M.: *See*—
Skripchik, Lilia P.; and Shutov, Gennady M., 4,425,267, Cl. 252-607.000.
Sichel, Enid K., to GTE Laboratories Incorporated. Optical filters comprising pyrolyzed polyimide films and lamp. 4,425,527, Cl. 313-112.000.
SIDEPAL S.A. Societe Industrielle de Participations Luxembourgeoise: *See*—
Kuhlmann, Herbert, 4,425,656, Cl. 373-74.000.
Siegl, Hermann K.: *See*—
Schweppe, Darrell L.; and Siegl, Hermann K., 4,425,581, Cl. 358-148.000.
Siemens Aktiengesellschaft: *See*—
Birkle, Siegfried; Gehring, Johann; and Stoeger, Klaus, 4,425,211, Cl. 204-198.000.
Haendle, Joerg; and Maass, Wolfgang, 4,425,580, Cl. 358-111.000.
Hanke, Leopold; and Schmelz, Helmut, 4,425,556, Cl. 338-25.000.
Keil, Rudolf; and Auracher, Franz, 4,425,024, Cl. 350-96.140.
Mair, Eduard, 4,424,701, Cl. 73-24.000.
Ristow, Dietrich, 4,425,573, Cl. 357-22.000.
Schoenewolf, Holger, 4,424,702, Cl. 73-24.000.
Winter, Hans; Mair, Eduard; and Schoenewolf, Holger, 4,424,703, Cl. 73-24.000.
Siemon Company, The: *See*—
Pohl, Karl-Heinz, 4,425,019, Cl. 339-198.00R.
Sievers, Richard W., to Spiral Tubing Corp. Multiple coil heat exchanger. 4,424,624, Cl. 29-727.000.
SIG Schweizerische Industrie-Gesellschaft: *See*—
Blochlinger, Ernst, 4,424,751, Cl. 105-447.000.
Silberstein, Donald A.; and McMurtrie, Andrew, to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,424,819, Cl. 131-336.000.
Silicon Technology Incorporated: *See*—
Evans, Joseph M., 4,425,191, Cl. 201-41.000.
Silinsky, Anatoly A.; Schukin, Vitaly S.; and Paushkin, Evgeny V., to Proektno-konstruktorskaya Organizatsiya "Orgsteklo". Method and apparatus for packing glass sheets in a container. 4,424,902, Cl. 206-454.000.
Silvestri, Victor J.; Tang, Denny D.; and Wiedmann, Siegfried K., to International Business Machines Corporation. Buried injector memory cell formed from vertical complementary bipolar transistor circuits and method of fabrication therefor. 4,425,574, Cl. 357-50.000.
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Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Sumeghy, Zoltan, 4,425,349, Cl. 424-258.000.
Simmons U.S.A. Corporation: *See*—
Callaway, Milton A., 4,424,600, Cl. 5-470.000.
Simonidesz, Vilmos: *See*—
Szantay, Csaba; Novak, Lajos; Aszodi, Jozsef; Simonidesz, Vilmos; Galambos, Geza; Kovacs, Gabor; Virag, Sandor; Stadler, Istvan; and Kormoczy, Peter, 4,425,358, Cl. 424-285.000.
Sims, Coleman W.; and Sims, W. P. Multi-channel fluid injection system. 4,424,859, Cl. 166-67.000.
Sims, W. P.: *See*—
Sims, Coleman W.; and Sims, W. P., 4,424,859, Cl. 166-67.000.
Singer Company, The: *See*—
Ljung, Bo H. G.; and Gamertsfelder, George R., 4,425,040, Cl. 356-350.000.
Singh, Raj N., to General Electric Company. Etched beta''-alumina ceramic electrolyte. 4,425,415, Cl. 429-193.000.
Sinkauz, Silvano. Circuit arrangement of a staircase lighting time switch. 4,425,532, Cl. 315-360.000.
Sis-Ter S.p.A.: *See*—
Di Salvo, Francesco, 4,425,123, Cl. 604-247.000.
Sisis Equipment (Macclesfield) Ltd.: *See*—
Staniforth, Eric; and Everett, Douglas A., 4,424,868, Cl. 172-21.000.
Skarvada, Thomas, to Crane Co. Spin-up detection apparatus for brake control system. 4,425,621, Cl. 364-426.000.
SKF Compagnie d'Applications Mecaniques: *See*—
Fillon, Marcel; and Monville, Jean M., 4,425,009, Cl. 308-187.100.
Skripchik, Lilia P.; and Shutov, Gennady M. Wood modifying composition comprising an aqueous solution of phenolic alcohols, urea and sodium pentachlorophenate. 4,425,267, Cl. 252-607.000.
Smilgys, Bruno S., to Veeder Industries Inc. Method and system for expanding the readout of a fuel pump register. 4,425,498, Cl. 235-1.00A.
Smit, Roelof C. K.: *See*—
Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Smit, Roelof C. K., 4,425,353, Cl. 424-267.000.
Smith, Allan M., to RCA Corporation. Fail soft tri-state logic circuit. 4,425,517, Cl. 307-473.000.
Smith, Charles P., Jr. Emergency rescue system. 4,424,884, Cl. 182-12.000.
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Lawrence, George A.; Prevett, Michael J.; and Smith, Eugene L., 4,425,232, Cl. 210-219.000.
Smith, J. Rudy. Modular stacking bag. 4,424,841, Cl. 150-33.000.
Smith, Lowell S.; Brisken, Axel F.; and Horner, Michael S., to General Electric Company. Ultrasonic transducer array shading. 4,425,525, Cl. 310-336.000.
Smith, Max D., to Indian Industries, Inc. Basketball backboard apparatus. 4,424,968, Cl. 273-1.50R.
Smith, Michael D.; and Miller, James A., to Motorola, Inc. Charge pump amplifier. 4,425,550, Cl. 330-107.000.
Smith and Nephew Associated Companies Limited: *See*—
Horlington, Michael, 4,425,344, Cl. 424-251.000.
Horlington, Michael; and Scott, Lindsey V., 4,425,345, Cl. 424-251.000.
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Smith, Rex L., to Corning Glass Works. Positioning measuring apparatus and method. 4,425,042, Cl. 356-375.000.
Smith, Robert D.: *See*—
Rolstad, Erik; and Smith, Robert D., 4,425,297, Cl. 376-247.000.
Smith, Scott L., to GNC Energy Corporation. Ambient froth flotation process for the recovery of bitumen from tar sand. 4,425,227, Cl. 209-5.000.

Smith, Todd I.: *See*—
Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., 4,425,649, Cl. 372-2.000.
Societa Italiana Vetro Siv S.p.A.: *See*—
Nicolino, Muzio, 4,425,021, Cl. 339-275.00T.
S.A. Automobiles Citroen: *See*—
Largeteau, Pierre A., 4,424,648, Cl. 51-1.000.
Societe Anonyme dite : L'Oreal: *See*—
Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, 4,425,326, Cl. 424-61.000.
Vanlerberghe, Guy; and Sebag, Henri, 4,425,364, Cl. 424-358.000.
Societe Automobiles Peugeot: *See*—
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Societe d'Assistance Techniques pour Produits Nestle S.A.: *See*—
Sozzi, Tomaso; Buhler, Marcel E. A.; and Dasek, Jaroslav, 4,425,366, Cl. 426-43.000.
Societe de Travaux en Milieu Ionisant (S.T.M.I.): *See*—
Charamathieu, Andre G.; Dessales, Jean, deceased; Dessales nee Vacher, Blanche A., administratrix; and Lebouc, Bernard P., 4,424,769, Cl. 122-392.000.
Societe d'Etudes de Machines Thermiques, S.E.M.T.: *See*—
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Soeteber, Ronald J., to Bucyrus-Erie Company. Tread belt link and cooperating drive tumbler. 4,425,007, Cl. 305-11.000.
Sokorai nee Janki, Agnes: *See*—
Budai, Zoltan; Kis-Tamas, Attila; Mezei, Tibor; Lay nee Konya, Aranka; Vigh, Zoltan; and Sokorai nee Janki, Agnes, 4,425,158, Cl. 71-121.000.
Solomon, Howard. Battery. 4,425,*14, Cl. 429-179.000.
Solvay & Cie (Societe Anonyme): *See*—
Georlette, Pierre; and Leva, Jean, 4,425,443, Cl. 521-93.000.
Someya, Masami: *See*—
Koike, Kazuyoshi; Watanabe, Junya; and Someya, Masami, 4,424,874, Cl. 180-70.00R.
Sommer Co.: *See*—
Sommer, Gordon M., 4,424,887, Cl. 188-264.00P.
Sommer, Gordon M., to Sommer Co. Brake unit. 4,424,887, Cl. 188-264.00P.
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, to Nissan Motor Co., Ltd.; and Hitachi, Ltd. Radio frequency interference suppressing ignition distributor rotor. 4,425,485, Cl. 200-19.00R.
Sonke, Horst: *See*—
Bauer, Hanns G.; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,425,657, Cl. 373-93.000.
Sonzogni, Franco, to SAME S.p.A. Wheel-hub with an epicyclic reduction gear, especially for the front axle of agricultural tractors. 4,424,879, Cl. 180-255.000.
Sorensen, Robert; Barrett, Edward A.; and Scarnato, Thomas J., to International Harvester Co. Forage blower discharge conduit. 4,425,058, Cl. 406-100.000.
Sorimachi, Akira, to Katoh Electrical Machinery Co. Ltd. Hinge for opening and closing a dust cover. 4,424,606, Cl. 16-223.000.
Sozzi, Tomaso; Buhler, Marcel E. A.; and Dasek, Jaroslav, to Societe d'Assistance Techniques pour Produits Nestle S.A. Production of yogurt. 4,425,366, Cl. 426-43.000.
Spalding, Delbert D. Fuel line preheater. 4,424,789, Cl. 123-557.000.
Speak, Trevor H.; Kernon, John D.; and Roberts, Derek A., to Rolls-Royce Limited. Air sealing for turbomachines. 4,425,079, Cl. 415-139.000.
Spector, Kenneth A.; Samson, Wilfred; and DeMello, Richard M., to C. R. Bard, Inc. Self sealing gasket assembly. 4,424,833, Cl. 137-849.000.
Speer, Stephen R.; and Evans, Hugh G. Modified control linkage for supercharged inlet air to internal combustion engine. 4,424,781, Cl. 123-342.000.
Spencer, Robert B., to National Engineering & Contracting Company. Building form and method of assembly. 4,424,951, Cl. 249-48.000.
Spencer, William R.; and Whitley, George F., Jr., to General Electric Company. Drain hole. 4,424,989, Cl. 285-14.000.
Sperry Corporation: *See*—
Callahan, Daniel L., 4,424,625, Cl. 29-764.000.
de Jong, Joannes N. M.; Earle, Richard L.; and Nardi, Anthony P., 4,425,509, Cl. 290-40.00C.
Eggers, Edward T.; Freimuth, John H.; Jennings, Richard E.; and Campbell, Willis R., 4,424,662, Cl. 56-341.000.
Eibner, Jules A., 4,425,627, Cl. 364-900.000.
Payton, Donald G., Jr., 4,424,865, Cl. 166-302.000.
Schwartz, Paul M.; and Chu, James C., 4,425,549, Cl. 329-161.000.
Shelly, Randolph D. W., 4,425,613, Cl. 363-26.000.
Stirling, Ronald C., 4,425,552, Cl. 331-39.000.
Swenson, Robert E.; Sasscer, Lawrence D.; and Pusic, Vladi, 4,425,615, Cl. 364-200.000.
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Spiral Tubing Corp.: *See*—
Sievers, Richard W., 4,424,624, Cl. 29-727.000.
Spitz, George T.: *See*—
Santer, J. Owen; and Spitz, George T., 4,425,466, Cl. 524-512.000.
Sprague Electric Company: *See*—
Maher, John P., 4,425,378, Cl. 427-79.000.
Squires, George; and Bland, Charles, to Combo Corporation. Sliding door track assembly including a track cover and mounting supports. 4,424,605, Cl. 16-94.00R.
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Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Sumeghy, Zoltan, 4,425,349, Cl. 424-258.000.
Standard Oil Company (Indiana): *See*—
Cahill, Paul J.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administratrix, 4,425,245, Cl. 252-33.000.
Cahill, Paul J.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administrator, 4,425,249, Cl. 252-51.50R.
Standard Steel Sponge, Inc.: *See*—
Grant, Louis A.; and Trunzo, Arthur F., 4,424,956, Cl. 266-248.000.
Grant, Louis A.; and Trunzo, Arthur F., 4,424,957, Cl. 266-248.000.
Staniforth, Eric; and Everett, Douglas A., to Sisis Equipment (Macclesfield) Ltd. Turf-treatment apparatus. 4,424,868, Cl. 172-21.000.
Stanton, William A.; Hazlewood, Jonathan; and Kerridge, Norman A., to Rolls-Royce Limited. Gas turbine engine casing. 4,425,080, Cl. 415-197.000.
Stauffer Chemical Company: *See*—
Felix, Raymond A., 4,425,283, Cl. 260-502.50F.
Felix, Raymond A., 4,425,284, Cl. 260-502.50F.
Gutman, Arnold D., 4,425,271, Cl. 260-192.000.
Weil, Edward D.; and Fearing, Ralph B., 4,425,306, Cl. 423-10.000.
Stauffer, Michael K., to Advanced Micro Devices, Inc. FSK Voice-band modem using digital filters. 4,425,665, Cl. 375-9.000.
Stauffer, Norman L., to Honeywell Inc. Light aperture for a lenslet-photodetector array. 4,425,501, Cl. 250-216.000.
Stead, Peter: *See*—
Perry, David A.; and Stead, Peter, 4,425,320, Cl. 424-1.100.
Steele, Robert E., to General Motors Corporation. Multiplex wiring system for motor vehicles. 4,425,564, Cl. 340-825.790.
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Stemer, Jacques: *See*—
Kaplan, Murray A.; Bouzard, Daniel; Perol, Claude; Stemer, Jacques; and Weber, Abraham, 4,425,348, Cl. 424-257.000.
Stenius, Per; Kizling, Jerzy; and Boutonnet, Magali, to Ytkemiska Institutet. Liquid suspension of particles of a metal belonging to the platinum group and a method for the manufacture of such a suspension. 4,425,261, Cl. 502-339.000.
Stenkvist, Sven-Einar, to ASEA AB. Metal oxide reduction furnace. 4,425,659, Cl. 373-108.000.
Stenz, Paul P., to C.A. Weidmuller GmbH & Co. Modular electrical plug and socket connectors. 4,425,018, Cl. 339-198.0GA.
Stepner, David E.: *See*—
Havlice, James F.; Waxman, Albert S.; Schwartz, Henry L.; and Stepner, David E., 4,424,813, Cl. 128-660.000.
Stern, Warren C., to Burroughs Wellcome Co. Treatment of tardive dyskinesia in mammals. 4,425,363, Cl. 424-330.000.
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Stickney, Douglas B., to Deere & Company. Tilting and angling mechanism for dozer blade. 4,424,871, Cl. 172-821.000.
Stirling, Ronald C., to Sperry Corporation. Direct-type binary frequency synthesizer. 4,425,552, Cl. 331-39.000.
Stoeger, Klaus: *See*—
Birkle, Siegfried; Gehring, Johann; and Stoeger, Klaus, 4,425,211, Cl. 204-198.000.
Stopinc Aktiengesellschaft: *See*—
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Strachan, Robert G.: *See*—
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Stratmann, Wilhelm; Vermaas, Leo F.; and Dijkshoorn, Willem, to Lever Brothers Company. Margarine fat blend. 4,425,371, Cl. 426-603.000.
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Striegl, Georg. Reamer with a flat rectangular reversible cutting bit. 4,425,063, Cl. 408-81.000.
Strobel, Gary A.; Gavlak, Andrea H.; and Jaynes, Jesse M., to Research and Development Institute, Inc. at Montana State University. Compositions containing and methods of use of an infectivity-cured Hr plasmid-bearing microorganism. 4,425,150, Cl. 71-77.000.
Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Steam generator having external fluidized bed combustion means. 4,424,765, Cl. 122-4.00D.

Strzala, Helmut: *See—*
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Stubbings, James H., to Potomac Applied Mechanics, Inc. Assembly of straight duct and transitions. 4,424,618, Cl. 29-509.000.

Stubler, Catherine E.; Palmer, George N.; and Albee, Paul J., to Allied Corporation. Water strippable adhesive. 4,424,642, Cl. 43-114.000.

Stull, Gene. Non-resealable dispenser cap construction. 4,424,918, Cl. 222-153.000.

Stuntz, Gordon F.: *See—*
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Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, to Ciba-Geigy Corporation. Sulfur-containing oxime compounds, processes for producing them, and their use for protecting cultivated plants. 4,425,151, Cl. 71-88.000.

Subramanyam, Dilip K.; Chapin, Henry J.; and Heyer, Bruce A., to Abex Corporation. Austenitic-manganese steel. 4,425,169, Cl. 148-137.000.

Subtex, Inc.: *See—*
George, Stephen, 4,425,397, Cl. 428-251.000.

Sugasawa, Fukashi: *See—*
Imai, Hiroshi; and Sugasawa, Fukashi, 4,425,604, Cl. 362-223.000.

Sugawara, Takeshi: *See—*
Takagi, Yoshiaki; Sugawara, Takeshi; Nii, Setsuo; and Matsuda, Takayuki, 4,424,953, Cl. 251-368.000.

Sugimoto, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Nuclear magnetic resonance apparatus having means for compensating a projecting signal. 4,425,547, Cl. 324-318.000.

Sugiyama, Masatoshi; Adachi, Keiichi; Kato, Eiichi; Ogawa, Akira; and Imai, Shinichi, to Fuji Photo Film Co., Ltd. Method for providing a color image by ink-jet printing. 4,425,162, Cl. 106-22.000.

Sullivan, Edward A., to Thiokol Corporation. Method of making and color stabilization of choline base. 4,425,202, Cl. 204-72.000.

Sumeghy, Zoltan: *See—*
Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Sumeghy, Zoltan, 4,425,349, Cl. 424-258.000.

Sumi, Takehiko; Harada, Masao; and Iwaya, Yoshikazu, to Kyoraku Co., Ltd. Elastic shaped article. 4,424,834, Cl. 138-121.000.

Sumikawa, Seizi: *See—*
Sutoh, Shinji; Sumikawa, Seizi; Kaneko, Shinichi; and Hara, Toshizo, 4,424,933, Cl. 236-44.00A.

Sumitomo Electric Industries, Ltd.: *See—*
Koiso, Takashi, 4,425,299, Cl. 419-6.000.
Tsuji, Kazuo; Yazu, Shuji; and Hara, Akio, 4,425,315, Cl. 423-446.000.

Sun Chemical Corporation: *See—*
Fitz, Edward J., 4,424,787, Cl. 123-549.000.

Sun Electric Corporation: *See—*
Gore, Dennis L.; and Patterson, Dennis H., 4,424,848, Cl. 157-1.280.

Sun Trac Industries, Inc.: *See—*
Winders, Gordon R., 4,424,802, Cl. 126-425.000.

Sunaga, Yasumasa, to Fuji Photo Optical Co., Ltd. Optical system for endoscopes. 4,425,025, Cl. 350-96.260.

Supermarket Systems: *See—*
Gillet, Guy, 4,424,893, Cl. 194-4.00C.

Sutoh, Shinji; Sumikawa, Seizi; Kaneko, Shinichi; and Hara, Toshizo, to Diesel Kiki Company, Ltd. Vehicle humidity control apparatus for preventing fogging of windows. 4,424,933, Cl. 236-44.00A.

Suyama, Tadakazu: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,425,347, Cl. 424-256.000.

Suzuki, Masao; and Fujimoto, Yasuhiro, to Sansui Electric Co., Ltd. Dual turntable record player with torque cancellation. 4,425,638, Cl. 369-265.000.

Suzuki, Migaku; Ochi, Kozo; and Igaue, Takamitsu, to Uni-Charm Corporation. Disposable diapers. 4,425,127, Cl. 604-366.000.

Suzuki, Rensaku: *See—*
Nishizawa, Junichi; Suzuki, Rensaku; and Aizawa, Kenji, 4,425,143, Cl. 55-31.000.

Suzuki, Ryoichi; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Cameras and circuits for sensing the action of camera shutters. 4,425,032, Cl. 354-458.000.

Suzuki, Takashi; Hibino, Kunio; Murai, Mikio; and Fujita, Takashi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium. 4,425,404, Cl. 428-341.000.

Suzuki, Yoshiaki: *See—*
Honma, Hideo; Suzuki, Yoshiaki; and Matsumoto, Yasuhiro, 4,425,205, Cl. 204-151.000.

Svendsen, Noel A.: *See—*
Lapeyre, James M.; Svendsen, Noel A.; Lindberg, Richard S.; and Carroll, Raymond J., Jr., 4,424,686, Cl. 62-259.100.

Sviridenok, Anatoly I.: *See—*
Bely, Vladimir A.; Sviridenok, Anatoly I.; Savkin, Valentin G.; Meshkov, Vladimir V.; and Myshkin, Nikolai K., 4,425,247, Cl. 252-12.000.

Swain, William J., to Mostek Corporation. Variable delay circuit for emulating word line delay. 4,425,633, Cl. 365-194.000.

Swan, George A., to Exxon Research and Engineering Co. Catalytic reforming process. 4,425,222, Cl. 208-65.000.

Swanson, Billy L., to Phillips Petroleum Company. Drilling fluids. 4,425,241, Cl. 252-8.50C.

Sweeney, Theodore J., to Theodore Sweeney & Company. Adhesively securable fastener. 4,425,065, Cl. 411-23.000.

Sweet, David B.: *See—*
Adams, Lowell J.; and Sweet, David B., 4,424,947, Cl. 244-134.00D.

Swenson, Robert E.; Sasscer, Lawrence D.; and Pusic, Vladi, to Sperry Corporation. Hierarchical memory system having cache/disk subsystem with command queues for plural disks. 4,425,615, Cl. 364-200.000.

Swiss Aluminium Ltd.: *See—*
Textor, Marcus; Kugler, Tibor; and Gabathuler, Jean-Pierre, 4,425,411, Cl. 428-702.000.

Syntex (U.S.A.) Inc.: *See—*
Pitchford, Alan G., 4,425,339, Cl. 424-239.000.

Synthelabo: *See—*
Bertin, Jean; and Frost, Jonathan R., 4,425,351, Cl. 424-262.000.

Szabo nee Mogyorosi, Katalin: *See—*
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Szantay, Csaba; Novak, Lajos; Aszodi, Jozsef; Simonidesz, Vilmos; Galambos, Geza; Kovacs, Gabor; Virag, Sandor; Stadler, Istvan; and Kormoczy, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. 13-Thia-prostacycline derivatives. 4,425,358, Cl. 424-285.000.

Szentgyorgyi, Geza: *See—*
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Szepvolgyi, Janos: *See—*
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.

Tabata, Youichiro: *See—*
Mizuno, Takaji; Mizuno, Masanori; Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,425,493, Cl. 219-130.510.

Tabata, Yukio: *See—*
Kawanishi, Toshiyuki; and Tabata, Yukio, 4,425,569, Cl. 346-76.0PH.

Tabereaux, Alton T.: *See—*
Wilson, Claude A.; and Tabereaux, Alton T., 4,425,201, Cl. 204-67.000.

Tada, Tetsuya, to Canyon Corporation. Push-button type sprayer. 4,424,920, Cl. 222-402.110.

Taguchi, Tetsuya: *See—*
Iura, Yukio; Yamamichi, Masayoshi; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashino, Yukio, 4,425,033, Cl. 354-423.000.

Tajima, Syouji, to Ricoh Company, Ltd. Developer carrier. 4,425,382, Cl. 427-203.000.

Takacs, Kalman; Papp, Maria H.; Kovacs, Gabor; Ajzert, Ilona K.; Simay, Antal; Literati Nagy, Peter; Puskas, Marian E.; Sebestyen, Gyula; Stadler, Istvan; and Sumeghy, Zoltan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Sulfur-containing isoquinoline derivatives in pharmaceutical compositions and methods of use. 4,425,349, Cl. 424-258.000.

Takada, Masaki: *See—*
Matsumoto, Kunio; and Takada, Masaki, 4,425,436, Cl. 435-191.000.

Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; and Wada, Tomio, to Sharp Kabushiki Kaisha; and Japan Electronic Industry Development Association. Thin film transistor. 4,425,572, Cl. 357-4.000.

Takagi, Izumi, to Kawasaki Jukogyo Kabushiki Kaisha. Suspension and steering assembly for snowmobile. 4,424,979, Cl. 280-21.00R.

Takagi, Satoshi: *See—*
Ito, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,425,591, Cl. 360-88.000.

Takagi, Yoshiaki; Sugawara, Takeshi; Nii, Setsuo; and Matsuda, Takayuki, to Honda Giken Kogyo Kabushiki Kaisha; and Teikoku Piston Ring Co., Ltd. Dual-layer sintered valve seat ring. 4,424,953, Cl. 251-368.000.

Takahama, Hideyuki: *See—*
Tsubakihara, Osamu; Kameyama, Kazuhide; Takahama, Hideyuki; Sakai, Kuniaki; and Tsuneoka, Akira, 4,424,855, Cl. 164-485.000.

Takahashi, Jiro: *See—*
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,425,422, Cl. 430-242.000.

Takahashi, Tohru: *See—*
Hosono, Nagao; Takahashi, Tohru; Kanbe, Junichiro; Toyono, Tsutomu; Nakamura, Shunji; and Tamura, Yasuyuki, 4,425,373, Cl. 427-14.100.

Takahashi, Yutaka: *See—*
Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, 4,424,937, Cl. 239-590.000.

Takai, Kazuki: *See—*
Ito, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,425,591, Cl. 360-88.000.

Takara Company: *See—*
Yoshiyuki, Hidetoshi, 4,424,950, Cl. 248-475.00R.

Takara Shuzo Co., Ltd.: *See—*
Matsui, Susumu; Nakajima, Kazuo; and Taniguchi, Tsutomu, 4,425,435, Cl. 435-190.000.

Takashi Saito/Iwasaki Denko Company, Ltd.: *See*—
Saito, Takashi, 4,424,689, Cl. 63-15.100.
Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,425,341, Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Company, Limited. Cephem compounds. 4,425,341, Cl. 424-246.000.
Takechi, Sadatoshi: *See*—
Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; and Wada, Tomio, 4,425,572, Cl. 357-4.000.
Takeda Chemical Industries, Ltd.: *See*—
Narukawa, Noriaki; Takeda, Keinosuke; and Yamazaki, Toshiyuki, 4,425,356, Cl. 424-279.000.
Takeda, Keinosuke: *See*—
Narukawa, Noriaki; Takeda, Keinosuke; and Yamazaki, Toshiyuki, 4,425,356, Cl. 424-279.000.
Takeda, Sadao; and Kyoori, Yooichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Programmable electronic cooking apparatus. 4,425,490, Cl. 219-10.55B.
Takei, Hirofumi, to Nissan Motor Company, Limited. Engine mounting for suspending engine relative to vehicle structure. 4,424,961, Cl. 267-64.270.
Takemoto, Hisao; and Igarashi, Tatsuo, to Toyo Soda Manufacturing Co., Ltd. Production of an allose-containing polysaccharide. 4,425,431, Cl. 435-101.000.
Tamotsu, Wakahata: *See*—
Saeki, Keiji; Ikeda, Junji; and Tamotsu, Wakahata, 4,425,209, Cl. 204-159.230.
Tamura, Shuichi; Ogawa, Masahiko; Tsunekawa, Tokuichi; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Automatic focus adjusting apparatus for camera. 4,425,031, Cl. 354-403.000.
Tamura, Yasuyuki: *See*—
Hosono, Nagao; Takahashi, Tohru; Kanbe, Junichiro; Toyono, Tsutomu; Nakamura, Shunji; and Tamura, Yasuyuki, 4,425,373, Cl. 427-14.100.
Tan, Sing L.: *See*—
Bergen, Franciscus H. M.; Degger, Wolter W. J.; and Tan, Sing L., 4,425,577, Cl. 358-55.000.
Tanaka, Hideyuki; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, to Denki Kagaku Kogyo Kabushiki Kaisha. Catalysts for polymerization of olefins. 4,425,258, Cl. 502-154.000.
Tanaka, Hisashi: *See*—
Yokoyama, Akira; Omomo, Yoshiro; Tanaka, Hisashi; and Saji, Hideo, 4,425,319, Cl. 424-1.100.
Tanaka, Osamu: *See*—
Cikawa, Naoyuki; Sato, Wako; and Tanaka, Osamu, 4,425,392, Cl. 428-90.000.
Tanaka, Shinichi; and Abe, Tadashi, to Matsushita Electric Industrial Co., Ltd. Optical recording apparatus. 4,425,637, Cl. 369-124.000.
Tanaka, Shozo: *See*—
Kawamoto, Fumiaki; Tanaka, Shozo; and Honma, Yoshihiro, 4,425,277, Cl. 260-410.90N.
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, to Fuji Photo Film Co., Ltd. Coating apparatus. 4,424,762, Cl. 118-410.000.
Tancer, Leon: *See*—
Muller, Klaus; and Tancer, Leon, 4,424,612, Cl. 24-669.000.
Tang, Denny D.: *See*—
Silvestri, Victor J.; Tang, Denny D.; and Wiedmann, Siegfried K., 4,425,574, Cl. 357-50.000.
Taniguchi, Takashi; and Mibae, Jiro, to Toray Industries, Inc. Coated plastic article. 4,425,403, Cl. 428-331.000.
Taniguchi, Tsutomu: *See*—
Matsui, Susumu; Nakajima, Kazuo; and Taniguchi, Tsutomu, 4,425,435, Cl. 435-190.000.
Tarbox, John W. Wiring harness construction means and method. 4,424,627, Cl. 29-857.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Image reproducing apparatus. 4,425,035, Cl. 355-3.0CH.
Tatabanyai Szenbanyak: *See*—
Kroo, Erik; Kovacs, Laszlo; Nemes, Istvan; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Moger nee Eremineva, Galina; Nemeth, Andras; Gal, Dezso ; Riederauer, Szilard; and Szepvolgyi, Janos, 4,425,219, Cl. 208-8.00R.
Tateosian, Louis H.; Royer, James R.; and Eden, George T., to Dentsply Research & Development Corporation. Method of root canal therapy. 4,425,094, Cl. 433-228.000.
Tatsuguchi, Masamitsu: *See*—
Muto, Ikuo; and Tatsuguchi, Masamitsu, 4,425,053, Cl. 405-63.000.
Taylor, Dale F., to General Electric Company. Electrochemical prediction of corrosion susceptibility of zirconium-base alloys. 4,425,193, Cl. 204-1.00T.
Taylor, James C. Coating thickness gauge. 4,425,546, Cl. 324-230.000.
TCL, Inc.: *See*—
Lam, Tat C., 4,425,663, Cl. 375-7.000.
Tecumseh Products Company: *See*—
Reese, Paul T., 4,425,145, Cl. 55-385.00B.
Teikoku Piston Ring Co., Ltd.: *See*—
Takagi, Yoshiaki; Sugawara, Takeshi; Nii, Setsuo; and Matsuda, Takayuki, 4,424,953, Cl. 251-368.000.
Tektronix, Inc.: *See*—
Chapman, David D.; Hoeren, Gerd H.; and Palmquist, Steven R., 4,425,643, Cl. 371-20.000.
Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Jeandot, Jean-Louis, 4,425,662, Cl. 375-4.000.
Teledyne Industries, Inc.: *See*—
Kennedy, Richard L., 4,425,286, Cl. 264-8.000.
Tell, Peter, to AB Piab. Ejector device. 4,425,084, Cl. 417-161.000.
Terada, Akitomo: *See*—
Nakata, Kojiro; Endo, Yasunobu; Terada, Akitomo; Hayashi, Kazumasa; and Kobori, Michio, 4,425,452, Cl. 524-47.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem and cepham compounds. 4,425,340, Cl. 424-246.000.
Teramoto, Takao; and Hidaka, Kensuke, to Fukuda Metal Foil & Powder Co., Ltd. Hard facing nickel-base alloy. 4,425,300, Cl. 420-453.000.
Terlaak, Daniel J., to Invacare Corporation. Constant belt tension assembly for wheelchairs. 4,424,873, Cl. 180-65.00E.
Terumo Corporation: *See*—
Shinno, Koji, 4,425,177, Cl. 156-272.200.
Testa, Luigi. High turbulence boiler. 4,424,768, Cl. 122-16.000.
Texaco Development Corp.: *See*—
Hunter, Walter D., 4,425,453, Cl. 524-69.000.
Texas Instruments Incorporated: *See*—
Levine, Jules D.; McKee, William R.; and Carson, Kent R., 4,425,408, Cl. 428-403.000.
Naden, Rex A., 4,425,099, Cl. 434-335.000.
Rizzo, Salvatore P., 4,425,015, Cl. 339-17.0LC.
Texasgulf Inc.: *See*—
Huff, Clark H., 4,425,003, Cl. 299-5.000.
Textor, Marcus; Kugler, Tibor; and Gabathuler, Jean-Pierre, to Swiss Aluminium Ltd. Mold with thermally insulating, protective coating. 4,425,411, Cl. 428-702.000.
Thaler, Warren A.: *See*—
Turner, S. Richard; Lundberg, Robert D.; Thaler, Warren A.; Walker, Thad O.; and Peiffer, Dennis G., 4,425,461, Cl. 524-400.000.
Walker, Thad O.; Turner, S. Richard; Lundberg, Robert D.; Thaler, Warren A.; and Pfeiffer, Dennis G., 4,425,463, Cl. 524-400.000.
Thelen, Werner: *See*—
Pesch, Jurgen; Knoll, Gunter; and Thelen, Werner, 4,424,895, Cl. 198-472.000.
Theodore Sweeney & Company: *See*—
Sweeney, Theodore J., 4,425,065, Cl. 411-23.000.
Thermo King Corporation: *See*—
Waldschmidt, William L.; and King, Donald D., 4,424,684, Cl. 62-239.000.
Theunissen, Walther A. H.: *See*—
van Geel, Jacobus N. C.; Dobbels, Frans M.; and Theunissen, Walther A. H., 4,425,148, Cl. 65-142.000.
Thiele, Richard: *See*—
Gruger, Christian; Freistedt, Reinhold; and Thiele, Richard, 4,425,110, Cl. 493-444.000.
Thiokol Corporation: *See*—
Bolieau, Christopher W., 4,424,746, Cl. 102-254.000.
Sullivan, Edward A., 4,425,202, Cl. 204-72.000.
Thomas C. Wilson, Inc.: *See*—
Schott, Donald E., 4,424,629, Cl. 30-105.000.
Thomiszer, Hubert J.: *See*—
Vincent, Donald P.; and Thomiszer, Hubert J., 4,424,649, Cl. 51-92.00R.
Thomson-Brandt: *See*—
Colineau, Joseph; and Rilly, Gerard, 4,425,533, Cl. 315-408.000.
Thomson-CSF: *See*—
Doyen, Jean; Morel, Philippe; and Resneau, Jean C., 4,425,575, Cl. 357-81.000.
Thomson, David; and Korec, Benjamin, to Waltec Inc. Metering unit. 4,424,952, Cl. 251-54.000.
Thorn, Joseph H.; and Jennings, Robert E., to RCA Corporation. Nozzle for coating a disc with a lubricant. 4,424,761, Cl. 118-300.000.
Thorogood, Peter B., to Burroughs Wellcome Co. Imidazole derivatives and salts thereof, their synthesis, and intermediates, and pharmaceutical formulations. 4,425,354, Cl. 424-273.00R.
Thuillier, Jean: *See*—
Godfroid, Jean-Jacques; and Thuillier, Jean, 4,425,352, Cl. 424-267.000.
Thumm, Jeffrey R.: *See*—
Haselwood, Donald E.; and Thumm, Jeffrey R., 4,425,578, Cl. 358-84.000.
Thyen, Eberhard; and Carr, Charles D., to Ethicon, Inc. Needle and suture holder and package. 4,424,898, Cl. 206-63.300.
Tichenor, Richard L.: *See*—
Howells, John N. M.; Morris, Drew W.; and Tichenor, Richard L., 4,425,070, Cl. 414-498.000.
Tiedemann, James B., to Shell Oil Company. Two-section arctic drilling structure. 4,425,055, Cl. 405-217.000.
Tiegel Manufacturing Company: *See*—
Tiegel, Ralph G., 4,424,854, Cl. 164-98.000.
Tiegel, Ralph G., to Tiegel Manufacturing Company. Side terminal lead alloy product and process. 4,424,854, Cl. 164-98.000.
Tieszen, Dale O.; Reed, Jerry O.; and Hagler, Gerald E., to Phillips Petroleum Company. Process for cleaning metal surfaces. 4,425,288, Cl. 264-39.000.
Tietjens, Eduard W.: *See*—
Groothuis, Gerrit J.; and Tietjens, Eduard W., 4,424,628, Cl. 30-43.920.
Tilghman, Bill M. Toy parachute release mechanism. 4,424,643, Cl. 46-86.00R.

Tilly, Lynn K.; and Bergquist, Ernest C., to AMSTED Industries Incorporated. Single wheelset railway truck sideframe. 4,424,750, Cl. 105-206.00R.

Times Mirror Company, The: *See*—
Marcroft, Brian J., 4,424,892, Cl. 194-1.00D.

Timken Company, The: *See*—
Cunningham, Robert J.; and Orvos, Peter S., 4,425,011, Cl. 308-214.000.

Toagosei Chemical Industry Co., Ltd.: *See*—
Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,425,473, Cl. 549-363.000.

Todd, Elizabeth A.: *See*—
Reusser, Robert E.; Kenton, Joseph R.; and Todd, Elizabeth A., 4,425,226, Cl. 208-307.000.

Toko, Inc.: *See*—
Nakayama, Koichi; and Fukitani, Yasuo, 4,425,563, Cl. 340-644.000.

Tokuda, Ryuji: *See*—
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,425,032, Cl. 354-458.000.
Tamura, Shuichi; Ogawa, Masahiko; Tsunekawa, Tokuichi; and Tokuda, Ryuji, 4,425,031, Cl. 354-403.000.

Tokunaga, Hiroshi: *See*—
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,425,035, Cl. 355-3.0CH.

Tokura, Naomi, to Nissan Motor Company, Limited. Exhaust gas particle burning method and apparatus for an internal combustion engine. 4,424,671, Cl. 60-274.000.

Tokyo Electric Co., Ltd.: *See*—
Narushima, Tsugio, 4,425,047, Cl. 400-605.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ido, Tadashi; Yokoyama, Hirotaka; Wada, Moriyasu; Oguchi, Toshihiko; Ishizawa, Akio; and Koike, Yoshiyasu, 4,425,401, Cl. 428-329.000.
Iwahashi, Hiroshi; and Asano, Masamichi, 4,425,632, Cl. 365-189.000.
Kinoshita, Kiyoshi; and Ishii, Takatoshi, 4,425,646, Cl. 371-61.000.
Morishita, Shigefumi; and Ebata, Yasuo, 4,425,554, Cl. 333-195.000.
Satou, Kouzou, 4,425,596, Cl. 361-93.000.
Shiraishi, Isao; and Asou, Yukio, 4,425,100, Cl. 445-67.000.
Sugimoto, Hiroshi, 4,425,547, Cl. 324-318.000.
Takeda, Sadao; and Kyoori, Yooichi, 4,425,490, Cl. 219-10.55B.

Tominari, Noboru: *See*—
Ishida, Takashi; and Tominari, Noboru, 4,424,785, Cl. 123-479.000.

Tomita, Yoshifumi: *See*—
Sasaya, Osamu; Nishizawa, Masahiro; Yokomizo, Hiroshi; Miura, Kiyoshi; and Tomita, Yoshifumi, 4,425,419, Cl. 430-179.000.

Tomooka, Keiji; Ogawa, Makoto; and Ishiguro, Hideo, to Hitachi, Ltd. Power supply system. 4,425,512, Cl. 307-138.000.

Toray Industries, Inc.: *See*—
Taniguchi, Takashi; and Mibae, Jiro, 4,425,403, Cl. 428-331.000.

Torii, Soichi, to Torii Winding Machine Co., Ltd. Warp tension regulating and warp feed apparatus in circular loom. 4,424,836, Cl. 139-13.00R.

Torii Winding Machine Co., Ltd.: *See*—
Torii, Soichi, 4,424,836, Cl. 139-13.00R.

TOSO Kabushiki Kaisha: *See*—
Kohayakawa, Hiroyuki, 4,424,851, Cl. 160-298.000.

Toyo Impanki Co., Ltd.: *See*—
Koike, Kazuyoshi; Watanabe, Junya; and Someya, Masami, 4,424,874, Cl. 180-70.00R.

Toyo Jozo Kabushiki Kaisha: *See*—
Matsumoto, Kunio; and Takada, Masaki, 4,425,436, Cl. 435-191.000.

Toyo Kogyo Co., Ltd.: *See*—
Kawata, Masayuki; and Yoshii: Shinichi, 4,425,304, Cl. 422-171.000.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Takemoto, Hisao; and Igarashi, Tatsuo, 4,425,431, Cl. 435-101.000.

Toyoda Gosei Co., Ltd.: *See*—
Hayashi, Keizo, 4,424,976, Cl. 277-205.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Yomogida, Toshihiko; Yokota, Tsuyoshi; and Tsuji, Haruhisa, 4,425,630, Cl. 364-900.000.

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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Tadashi; Hanaoka, Masanori; Hashiguchi, Yukihide; Ootsuka, Yoshinori; and Yamaguchi, Hiroaki, 4,424,705, Cl. 73-35.000.
Sasaki, Toshihiro; Ikehata, Hiromi; and Fukumoto, Ryoichi, 4,424,647, Cl. 49-502.000.
Shiratori, Harunori; Kikuchi, Kenichi; and Moriya, Yoshikazu, 4,424,984, Cl. 280-661.000.

Tractech, Inc.: *See*—
Bawks, James R., 4,424,725, Cl. 74-650.000.

Transamerica DeLaval Inc.: *See*—
Allen, Walter E., 4,424,776, Cl. 123-142.50R.

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Travis, Merton A., 4,425,049, Cl. 403-237.000.

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Trebaol, Francois P. Vehicle wheel having safety tread. 4,424,842, Cl. 152-158.000.

Trenkle, Robert W.: *See*—
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Tresselt, Carl P., to Bendix Corporation, The. Beam forming network for circular array antennas. 4,425,567, Cl. 343-373.000.

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Kurata, Hirotaka, 4,425,587, Cl. 358-335.000.

Trostle, John W., to Aluminum Company of America. Compensating clip for siding. 4,424,655, Cl. 52-520.000.

Trucco, Horacio A. Internal combustion engine for diverse fuels. 4,424,780, Cl. 123-255.000.

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Grant, Louis A.; and Trunzo, Arthur F., 4,424,957, Cl. 266-248.000.

Tsai, Boh C.: *See*—
Farrell, Christopher J.; Tsai, Boh C.; and Wachtel, James A., 4,425,410, Cl. 428-516.000.

Tsaliovich, Anatoly; and Kincaid, John, to Belden Corporation. Method and apparatus for measuring the surface transfer impedance of a piece of shielded cable. 4,425,542, Cl. 324-58.00R.

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Tsuji, Haruhisa: *See*—
Yomogida, Toshihiko; Yokota, Tsuyoshi; and Tsuji, Haruhisa, 4,425,630, Cl. 364-900.000.

Tsuji, Kazuo; Yazu, Shuji; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Diamond sintered compact wherein crystal particles are uniformly orientated in the particular direction and the method for producing the same. 4,425,315, Cl. 423-446.000.

Tsuji, Kiyoshi: *See*—
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Tsuji, Nobuo: *See*—
Yamaguchi, Nobutaka; Fujiyana, Masaaki; Tsuji, Nobuo; and Nasu, Norio, 4,425,400, Cl. 428-329.000.

Tsuji, Takao: *See*—
Matsumoto, Kazuya; Yamaguchi, Isao; Tsuji, Takao; and Sato, Hideaki, 4,425,023, Cl. 350-96.140.

Tsukamoto, Shizumasa; and Ieda, Yoshihito, to Showa Manufacturing Co., Ltd. Front fork for motorcycle or the like. 4,424,980, Cl. 280-276.000.

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Tamura, Shuichi; Ogawa, Masahiko; Tsunekawa, Tokuichi; and Tokuda, Ryuji, 4,425,031, Cl. 354-403.000.

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Tsubakihara, Osamu; Kameyama, Kazuhide; Takahama, Hideyuki; Sakai, Kuniaki; and Tsuneoka, Akira, 4,424,855, Cl. 164-485.000.

Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, to Kao Soap Co., Ltd. Water-in-oil type cosmetic composition. 4,425,329, Cl. 424-70.000.

Tuovinen, Frans H.; Hokkanen, Pentti O.; Nurminen, Aimo A.; Mustikka, Lauri A.; and Virta, Matti A., to Outokumpu Oy. Brickwork construction. 4,424,959, Cl. 266-283.000.

Turnbull, Andrew A.; Hall, Raymond F.; and Overall, Colin D., to U.S. Philips Corporation. Bolometric detector. 4,425,504, Cl. 250-353.000.

Turnbull, Andrew A.: *See*—
Hall, Raymond F.; and Turnbull, Andrew A., 4,425,502, Cl. 250-338.000.

Turnbull, William G.: *See*—
Brown, Karl L.; Turnbull, William G.; and Jones, Phillip T., 4,425,506, Cl. 250-396.0ML.

Turner, Arthur R. Pre-cambered steel beam. 4,424,652, Cl. 52-204.000.

Turner, George M.: *See*—
Jackson, Eric A.; and Turner, George M., 4,424,722, Cl. 74-422.000.

Turner, S. Richard; Lundberg, Robert D.; Walker, Thad O.; and Peiffer, Dennis G., to Exxon Research and Engineering Co. Drilling fluids based on powdered sulfonated thermoplastic polymers. 4,425,455, Cl. 524-158.000.

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Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,424,685, Cl. 62-249.000.
Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; and Tyszkiewicz, Theodore J., 4,425,264, Cl. 252-522.00R.
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Licciardello, Michael, 4,425,265, Cl. 252-522.00R.
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Jackson, Milan D., 4,424,997, Cl. 294-53.500.
Uchimi, Takashi: *See—*
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Uchiyama, Takashi: *See—*
Iura, Yukio; Yamamichi, Masayoshi; Uchiyama, Takashi; Taguchi, Tetsuya; and Mashino, Yukio, 4,425,033, Cl. 354-423.000.
Uchiyama, Yasuji: *See—*
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Ueda, Masakazu: *See—*
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Ueguri, Shigeo: *See—*
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Umeda, Naoki: *See—*
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Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner, 4,425,101, Cl. 464-139.000.
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Suzuki, Migaku; Ochi, Kozo; and Igaue, Takamitsu, 4,425,127, Cl. 604-366.000.
Union Carbide Corporation: *See—*
Huang, Jamin, 4,425,338, Cl. 424-200.000.
Kurtz, Stuart J.; Scarola, Leonard S.; and Miller, John C., 4,425,044, Cl. 366-79.000.
Union Oil Company of California: *See—*
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Millman, William S., 4,425,221, Cl. 208-216.00R.
United Kingdom Atomic Energy Authority: *See—*
Rosevear, Alan, 4,425,434, Cl. 435-176.000.
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Air Force: *See—*
Holzman, Allen L., 4,424,679, Cl. 60-251.000.
LaPierre, Donald C., 4,425,553, Cl. 331-74.000.
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Berkowitz, Daniel; Bennett, Alan B.; Secrist, John L.; and Milette, Debra A., 4,425,367, Cl. 426-89.000.
Dible, William D.; and Chen, Cheug L., 4,425,654, Cl. 372-86.000.
Scheer, Lawrence E., 4,424,712, Cl. 73-514.000.
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Fisch, Nathaniel J.; and Boozer, Allen H., 4,425,295, Cl. 376-123.000.
Hanson, Clark L., 4,424,825, Cl. 137-1.000.
Langebrake, Clair O., 4,424,975, Cl. 277-81.00R.
McGuire, Patrick L., 4,424,866, Cl. 166-303.000.
Milliman, Edward M., 4,424,896, Cl. 198-545.000.
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Pearson, Richard K.; and Hirschfeld, Tomas B., 4,425,136, Cl. 44-51.000.
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Lee, Mark C., 4,425,376, Cl. 427-57.000.
Navy: *See—*
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Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., 4,425,649, Cl. 372-2.000.
Magorian, William R.; and Wetzel, Kenneth R., 4,424,745, Cl. 102-215.000.
U.S. Philips Corporation: *See—*
Bergen, Franciscus H. M.; Degger, Wolter W. J.; and Tan, Sing L., 4,425,577, Cl. 358-55.000.
De Niet, Edmond, 4,425,562, Cl. 340-347.0DD.
Groothuis, Gerrit J.; and Tietjens, Eduard W., 4,424,628, Cl. 30-43.920.
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Huisman, Hendrikus F.; and Groen, Harm J., 4,425,409, Cl. 428-457.000.
Postma, Lambertus, 4,425,593, Cl. 360-113.000.
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van Mil, Job F. P.; van den Enden, Adrianus W. M.; and van Harreveld, Teunis A., 4,425,478, Cl. 179-18.0BC.
van Rosmalen, Gerard E., 4,425,043, Cl. 356-375.000.
United Technologies Corporation: *See—*
Fishter, Robert E.; Lada, Henry; and Putnam, Victoria M., 4,425,185, Cl. 156-656.000.
Galasso, Francis S.; and Veltri, Richard D., 4,425,407, Cl. 428-368.000.
Robbins, Donald A., 4,425,078, Cl. 415-135.000.
Universal Pioneer Corporation: *See—*
Kanamaru, Hitoshi, 4,425,583, Cl. 358-322.000.
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Uno, Syuzo: *See—*
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UOP Inc.: *See—*
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Updike, Dean P.: *See—*
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Upjohn Company, The: *See—*
Jacobine, Anthony F., 4,425,208, Cl. 204-159.150.
Knight, John C.; and Wovcha, Merle G., 4,425,429, Cl. 435-55.000.
Upmeier, Hartmut, to Windmoller & Holscher. Method of controlling the film thickness of tubular film produced in a blown film extruder installation. 4,425,290, Cl. 264-40.100.
USM Corporation: *See—*
Bauer, Herbert; and Piestert, Gerhard, 4,425,179, Cl. 156-307.500.
Lovett, Albert E., 4,424,928, Cl. 227-28.000.
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Vanderborgh, Nicholas E.: *See—*
Elliott, Guy R. B.; Barraclough, Bruce L.; and Vanderborgh, Nicholas E., 4,424,858, Cl. 166-52.000.
van der Lely, Cornelis. Articulated tractor with rear lifting device powered by tandem engines. 4,424,878, Cl. 180-235.000.
van Geel, Jacobus N. C.; Dobbels, Frans M.; and Theunissen, Walther A. H., to Deutsche Gesellschaft fur Wiederaufarbeitung. Device for the continuous production of glass bodies especially containing radioactive waste. 4,425,148, Cl. 65-142.000.
Van Grasdorff, Maurits W.: *See—*
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van Harreveld, Teunis A.: *See—*
van Mil, Job F. P.; van den Enden, Adrianus W. M.; and van Harreveld, Teunis A., 4,425,478, Cl. 179-18.0BC.
Van Horne, Arthur C.; and Branson, Terry L., to Dataproducts Corporation. Ribbon cassette and sensor assembly. 4,425,046, Cl. 400-208.000.
Vanlerberghe, Guy; and Sebag, Henri, to Societe Anonyme dite: L'Oreal. Compositions containing an organo-silicon compound. 4,425,364, Cl. 424-358.000.
van Mil, Job F. P.; van den Enden, Adrianus W. M.; and van Harreveld, Teunis A., to U.S. Philips Corporation. Conference system for telephony. 4,425,478, Cl. 179-18.0BC.
Van Note, Paul L. Roof insulation system and method. 4,424,650, Cl. 52-96.000.
van Rosmalen, Gerard E., to U.S. Philips Corporation. Device for detecting the position of an object. 4,425,043, Cl. 356-375.000.
Vanslette, Robert A.: *See—*
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Varga, Sandor L.: *See—*
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Vassilatos, George, to Du Pont de Nemours, E. I., and Company. Preparation of amorphous ultra-high-speed-spun polyethylene terephthalate yarn for texturing. 4,425,293, Cl. 264-176.00F.
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Veltri, Richard D.: *See—*
Galasso, Francis S.; and Veltri, Richard D., 4,425,407, Cl. 428-368.000.
Ventrex Laboratories, Inc.: *See—*
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Venture Innovations, Inc.: *See—*
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Verhave, Jan A.: *See*—
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Vernon, Lonnie W.; Jacobs, Fritz E.; and Bauman, Richard F., to Exxon Research and Engineering Co. Process for converting petroleum residuals. 4,425,224, Cl. 208-56.000.
Vickers, Anthony G.; Hammershaimb, Harold U.; and Hemler, Charles L., Jr., to UOP Inc. Fluid catalyst regeneration apparatus. 4,425,301, Cl. 422-111.000.
Victor Company of Japan, Ltd.: *See*—
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Miyasaka, Takao, 4,425,522, Cl. 310-268.000.
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vom Braucke, Hans; vom Braucke, Manfred; and Westerwelle, Dieter. Hand tool with intersecting pronged wheels. 4,424,869, Cl. 172-349.000.
vom Braucke, Manfred: *See*—
vom Braucke, Hans; vom Braucke, Manfred; and Westerwelle, Dieter, 4,424,869, Cl. 172-349.000.
Von Nortwick, John E., II. Eyeglass nose pad weight distribution measurement. 4,424,710, Cl. 73-172.000.
Vora, Madhukar B.; and Hingarh, Hemraj K., to Fairchild Camera & Instrument Corporation. Polycrystalline silicon Schottky diode array. 4,425,379, Cl. 427-84.000.
Vsesojuzny Nauchno-Issledovatelsky I Konstruktorsky Institut Po Oborudovaniju Dlya Shinnoi Promyshlennosti: *See*—
Samokhvalov, Jury I.; Kim, Vladimir A.; and Golovkin, Engels K., 4,425,180, Cl. 156-415.000.
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Wadensten, Theodore S. Air actuated rotary vibrator with resilient shock mount to provide linear movement. 4,424,718, Cl. 74-87.000.
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Wagenmakers, Harry, to Ruti-Te Strake B.V. Weaving error correction device for shuttleless weaving machine. 4,424,835, Cl. 139-1.00E.
Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Power-and-free conveyor. 4,424,749, Cl. 104-172.00S.
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Walda, Fedde; Walda, Nanne M.; and Walda, Benno F. Railway car turntable loading system. 4,425,064, Cl. 410-1.000.
Walda, Nanne M.: *See*—
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Waldschmidt, William L.; and King, Donald D., to Thermo King Corporation. Condenser section for container refrigeration unit. 4,424,684, Cl. 62-239.000.
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Walker, Lance A.: *See*—
Bartholet, Michael A.; Cochran, James L.; Janssen, Donovan M.; Magno, Robert; Rood, Allan J.; Seaward, William S.; and Walker, Lance A., 4,424,963, Cl. 270-53.000.
Walker, Thad O.; Turner, S. Richard; Lundberg, Robert D.; Thaler, Warren A.; and Pfeiffer, Dennis G., to Exxon Research and Engineering Co. Drilling fluids based on a mixture of sulfonated thermoplastic polymer and an amine-treated clay. 4,425,463, Cl. 524-400.000.
Walker, Thad O.: *See*—
Turner, S. Richard; Lundberg, Robert D.; Walker, Thad O.; and Peiffer, Dennis G., 4,425,455, Cl. 524-158.000.
Turner, S. Richard; Lundberg, Robert D.; Thaler, Warren A.; Walker, Thad O.; and Peiffer, Dennis G., 4,425,461, Cl. 524-400.000.
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Wallace Computer Services, Inc.: *See*—
Chang, John C. H., 4,425,386, Cl. 427-256.000.
Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines and processes therefor. 4,425,272, Cl. 260-245.600.
Walsh, Myles A. Bulk cargo handling method. 4,425,381, Cl. 427-181.000.
Waltec Inc.: *See*—
Thomson, David; and Korec, Benjamin, 4,424,952, Cl. 251-54.000.
Walters, Douglas L. Implement coupling arrangement. 4,424,983, Cl. 280-475.000.
Wang, Chia-Gee. Auger microlithography with regard to Auger window. 4,425,423, Cl. 430-264.000.
Wanlass, Frank M., to ZYTREX Corporation. Buffer circuit and integrated semiconductor circuit structure formed of bipolar and CMOS transistor elements. 4,425,516, Cl. 307-446.000.
Ward, Robert E.; Lasley, James A.; and Young, John C., to Cooper Industries, Inc. High-strength flexible twin-lead cable. 4,425,475, Cl. 174-117.00F.
Warner-Lambert Company: *See*—
Hartenstein, Johannes; and Fritschi, Edgar, 4,425,350, Cl. 424-258.000.
Hoefle, Milton L.; and Bobowski, George, 4,425,355, Cl. 424-274.000.
Warwick, Edward H., to General Motors Corporation. Vehicle braking system and method of braking. 4,425,005, Cl. 303-3.000.
Wasel-Nielen, Horst-Dieter: *See*—
Mauer, Alexander; Wasel-Nielen, Horst-Dieter; and Adrian, Renate, 4,425,253, Cl. 252-135.000.
Watanabe, Isamu: *See*—
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,425,430, Cl. 435-80.000.
Watanabe, Junya: *See*—
Koike, Kazuyoshi; Watanabe, Junya; and Someya, Masami, 4,424,874, Cl. 180-70.00R.
Watanabe, Naomitsu, to Hitachi, Ltd. Color picture tubes and method of manufacturing the same. 4,425,528, Cl. 313-466.000.
Watanabe, Ryuzo: *See*—
Shimoi, Yoichi; Akune, Mikio; Akimoto, Tamotsu; and Watanabe, Ryuzo, 4,425,285, Cl. 261-95.000.
Watanabe, Wataru; and Kaneko, Shoji, to Clarion Co., Ltd. Locking device of a starting position searching mechanism. 4,425,595, Cl. 360-137.000.
Watkins, James D., to Golden Valley Foods Inc. Food heating container. 4,425,368, Cl. 426-107.000.
Watkins, Wendell R.; and White, Kenneth O., to United States of America, Army. Method for detecting the presence of a gas in an atmosphere. 4,425,503, Cl. 250-345.000.
Waxman, Albert S.: *See*—
Havlice, James F.; Waxman, Albert S.; Schwartz, Henry L.; and Stepner, David E., 4,424,813, Cl. 128-660.000.
Weaver, Charles S.; and Yarborough, John M., Jr., to SRI International. Digital data transmission with parity bit word lock-on. 4,425,645, Cl. 371-47.000.
Weaver, John M.: *See*—
Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, 4,425,325, Cl. 424-54.000.
Webb, Harry A.; and Lawrence, Jackson, to Cluett, Peabody & Co., Inc. Method of improved pile appearance in liquid ammonia treated fabric; pretreatment with crease resistant resin. 4,425,131, Cl. 8-115.600.

Weber, Abraham: *See*—
Kaplan, Murray A.; Bouzard, Daniel; Perol, Claude; Stemer, Jacques; and Weber, Abraham, 4,425,348, Cl. 424-257.000.

Weber, Eleanor J. Forming and embossing template. 4,424,601, Cl. 7-113.000.

Weeks, James B., to Motor Wheel Corporation. Wheel for a tracklaying vehicle. 4,425,008, Cl. 305-24.000.

Weil, Edward D.; and Fearing, Ralph B., to Stauffer Chemical Company. Method for the recovery of uranium from wet-process phosphoric acid. 4,425,306, Cl. 423-10.000.

Weiler, Gerhard H.; and Komendowski, Henry, to Automatic Liquid Packaging, Inc. Method for molding and filling a dispensing container having one or more removable closure means unitary therewith. 4,425,294, Cl. 264-525.000.

Weingarten, Harold I., to Monsanto Company. Novel peptide and peptolide substrates for mammalian collagenase. 4,425,428, Cl. 435-23.000.

Weinstein, Morris: *See*—
Green, Harold A.; Weinstein, Morris; and Prodo, Kenneth W., 4,425,243, Cl. 252-8.50C.

Weis, Charles W., to Power-Wire Fastener Systems, Inc. Clip magazine feed for fastener driving tools. 4,424,929, Cl. 227-32.000.

Weiss, Heinz, to Deere & Company. Attachment device for the front of a motor vehicle. 4,424,870, Cl. 172-810.000.

Weiss, Heinz, to Deere & Company. Attachment device for a motor vehicle. 4,424,982, Cl. 280-461.00A.

Welland, David R.: *See*—
Blackmer, David E.; and Welland, David R., 4,425,551, Cl. 330-261.000.

Wells, William, to Korf Technologies, Inc. Apparatus for treating liquid metal in a vessel. 4,424,955, Cl. 266-44.000.

Wendel, Nikolaus; and Plener, Joachim, to Markisches Werk GmbH. Valve rotator. 4,424,773, Cl. 123-90.290.

Wentworth, Robert J.: *See*—
Belanger, James A.; Wentworth, Robert J.; and Astley, Graham J., 4,424,602, Cl. 15-97.00B.

Wertz, Keith J.: *See*—
Moskin, Jeffrey M.; and Wertz, Keith J., 4,425,488, Cl. 200-220.000.

Wes, James A.; and Ottoson, Raymond H., to Northrop Corporation. Device to spatially encode a beam of light. 4,424,944, Cl. 249-3.130.

West, Alan I.: *See*—
Bookwalter, John R.; and West, Alan I., 4,424,724, Cl. 74-540.000.

Westelaken, Christianus M. T. Modular column dryer for particulate material. 4,424,634, Cl. 34-167.000.

Western Design Corporation: *See*—
Bacon, Lawrence D.; and Golden, Michael D., 4,424,735, Cl. 89-34.000.

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Bordelon, Chester M.; Hunt, Richard M.; and Wheeler, Robert A., 4,425,482, Cl. 179-120.000.

Western Electric Co., Inc.: *See*—
Becker, Alan R.; Monahan, Jack J.; and Schneider, Fred J., 4,425,074, Cl. 414-736.000.
Durr, Helmut E.; and Heard, Charles B., Jr., 4,425,474, Cl. 174-110.00F.
Fanning, William J.; Nichele, Peter J.; and Pratali, Roger P., 4,424,617, Cl. 29-25.420.
Kanotz, William M., 4,425,292, Cl. 264-174.000.
Rosenberg, Sheldon J., 4,424,899, Cl. 206-305.000.

Westerwelle, Dieter: *See*—
vom Braucke, Hans; vom Braucke, Manfred; and Westerwelle, Dieter, 4,424,869, Cl. 172-349.000.

Westinghouse Electric Corp.: *See*—
Alvino, William M.; and Fuller, Timothy J., 4,425,467, Cl. 524-600.000.
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Courson, Iber C., 4,425,603, Cl. 362-222.000.
Detinko, Felix M.; Kosanovich, Nicholas S.; and Levino, John A., 4,425,523, Cl. 310-258.000.
Martin, Harry F., 4,425,077, Cl. 415-115.000.
Pavlik, Norman M.; and Sefko, John, 4,425,166, Cl. 106-286.200.
Shields, Edward P., 4,425,298, Cl. 376-249.000.

Weston, David. Production of a purified alumina-silica product and substantially pure aluminum chloride from bauxites and clays. 4,425,308, Cl. 423-136.000.

Weston, David. Production of a purified alumina-silica product and substantially pure aluminum trichloride from bauxites and clays. 4,425,309, Cl. 423-136.000.

Weston, David. Production of aluminum chlorides from bauxites and clays. 4,425,310, Cl. 423-136.000.

Weston, David. Production of a purified alumina-silica product and substantially pure aluminum trichloride from bauxites and clays. 4,425,311, Cl. 423-136.000.

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Grendon, William C., 4,425,178, Cl. 156-307.300.

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Whirlpool Corporation: *See*—
Manson, Larry J., 4,424,683, Cl. 62-135.000.

White, Jack M., to Babcock & Wilcox Company, The. Force transducer. 4,424,717, Cl. 73-862.650.

White, James R., to Mobil Oil Corporation. Oil recovery by waterflooding. 4,424,863, Cl. 166-268.000.

White, Kenneth B., to Akzona Incorporated. Polyols for urethane-modified isocyanurate foams. 4,425,444, Cl. 521-105.000.

White, Kenneth B., to Akzona, Inc. Method for the manufacture of polyisocyanurate foams. 4,425,445, Cl. 521-105.000.

White, Kenneth O.: *See*—
Watkins, Wendell R.; and White, Kenneth O., 4,425,503, Cl. 250-345.000.

White, Lawrence J.; and Gen, Tamar G., to Raychem Corporation. Thermochromic compositions. 4,424,990, Cl. 285-381.000.

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Baron, Arthur L.; Krishnan, Sivaram; Witman, Mark W.; and White, Roger J., 4,425,456, Cl. 524-165.000.

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Wilborn, Harold A., II. Roller clip structure. 4,424,822, Cl. 132-46.00A.

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Wilhelmson, Jack L., to Cooper Industries, Inc. Carbon-based soldering and de-soldering tip and method of manufacturing same. 4,424,930, Cl. 228-20.000.

Wilhoite, Murray O. Hot water heating system. 4,424,934, Cl. 237-7.000.

Wilkinson, William H., to Battelle Memorial Institute. Power unit for absorption heat exchange system. 4,424,688, Cl. 62-476.000.

Williams, Charles D., to Marquest Medical Products, Inc. Syringe with means for automatically sealing a blood sample within the syringe. 4,424,817, Cl. 128-766.000.

Williams, David O., to Saytech, Inc. Flame retardant polymer composition. 4,425,447, Cl. 521-132.000.

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Richmond, William R., 4,424,906, Cl. 211-50.000.

Wills, Frank E., to Borg-Warner Corporation. Control system for AC induction motor. 4,425,539, Cl. 318-771.000.

Wilson, Barbara J. Button and buttonhole tape. 4,425,391, Cl. 428-43.000.

Wilson, Claude A.; and Tabereaux, Alton T., to Reynolds Metals Company. Method for improved alumina control in aluminum electrolytic cells. 4,425,201, Cl. 204-67.000.

Wilson, Evearist B.; and Ruthenberg, Meyer L., to Koppers Company, Inc. Bundle former for paperboard boxes. 4,425,068, Cl. 414-36.000.

Winders, Gordon R., to Sun Trac Industries, Inc. Pneumatic drive for solar concentrators. 4,424,802, Cl. 126-425.000.

Windmoller & Holscher: *See*—
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Winter, Hans; Mair, Eduard; and Schoenewolf, Holger, to Siemens Aktiengesellschaft. Device for monitoring the concentration of an air-vapor mixture. 4,424,703, Cl. 73-24.000.

Wirth, Hermann O.; and Friedrich, Hans-Helmut, to Ciba-Geigy Corporation. Complex compounds, process for their preparation, and their use. 4,425,278, Cl. 260-429.00R.

Wirz, Armin: *See*—
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Wisconsin Alumini Research Foundation: *See*—
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Wolff, Robin K.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,425,365, Cl. 426-3.000.

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Womack, Charles E. Catheter assembly. 4,425,124, Cl. 604-283.000.

Woodell, Jack L., to Frederick Electronic Corporation. High-speed time share processor. 4,425,616, Cl. 364-200.000.

Woody, John C., to Borg-Warner Corporation. Fuel control system and apparatus for gas turbine engine. 4,424,666, Cl. 60-39.141.

Wovcha, Merle G.: *See—*
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Wuchinich, David G. Ultrasonic resonant vibrator. 4,425,115, Cl. 604-22.000.

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Wyss, Georges, to Ateliers des Charmilles, S.A. Electrical discharge machining method with simultaneous relative advance and cyclic translational movement of the electrodes. 4,425,492, Cl. 219-69.00M.

Xenell Corporation: *See—*
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Yamada, Yasushi; Kunikata, Kenji; and Otake, Hideo, to Nippon Kayaku Kabushiki Kaisha. Reactive disazo compounds. 4,425,270, Cl. 260-153.000.

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Yamamoto, Noboru; Makino, Tomoatsu; Okuda, Ryoichi; and Sakurai, Hiroshi, to Nippondenso Co., Ltd. Knock detecting apparatus for internal combustion engine. 4,424,704, Cl. 73-35.000.

Yamamoto, Shigeo; and Kobayashi, Kazuto, to Keisuke Honda. Fish sonar. 4,425,635, Cl. 367-125.000.

Yamashita, Hisateru, to Kabushiki Kaisha Komatsu Seisakusho. Shifting apparatus for a transfer bar of a transfer press. 4,424,742, Cl. 100-229.00R.

Yamazaki, Haruyuki; Akatsu, Yasuaki; and Sakaguchi, Seiichiro, to Agency of Industrial Science and Technology, The. Low boiling point medium evaporator. 4,424,770, Cl. 122-488.000.

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Yokoyama, Hirotaka: *See—*
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Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, to Green Cross Corporation, The. Perfluorobicyclo compound emulsion preparation. 4,425,347, Cl. 424-256.000.

Yomogida, Toshihiko; Yokota, Tsuyoshi; and Tsuji, Haruhisa, to Toyoda Koki Kabushiki Kaisha. Sequence instruction display system. 4,425,630, Cl. 364-900.000.

Yoneda, Yoshihide: *See—*
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Yoshida, Minoru. Coupler for use in an oil cooling system. 4,424,778, Cl. 123-196.0AB.

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Yoshida, Yutaka, to Hitachi, Ltd. Running control apparatus for trackless moving body. 4,424,875, Cl. 180-168.000.

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Yoshiyuki, Hidetoshi, to Takara Company. Edge member for mirror assemblies. 4,424,950, Cl. 248-475.00R.

Yoshiyuki, Kazuhiko, to Nissan Motor Company, Limited. Combination bumper-and-radiator structure. 4,424,996, Cl. 293-117.000.

Young, John C.: *See—*
Ward, Robert E.; Lasley, James A.; and Young, John C., 4,425,475, Cl. 174-117.00F.

Young, William E.; and Pasco, William R., to American Cyanamid Company. Adjustable feeding device for the administration of dosages of gels and pastes to farm animals. 4,425,121, Cl. 604-209.000.

Yovankin, Robert A., to KCP Bandage, Inc. Knee bandage. 4,424,809, Cl. 128-165.000.

Ytkemiska Institutet: *See—*
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Yunan, Malak E., to Du Pont de Nemours, E. I., and Company. Non-electric blasting assembly. 4,424,747, Cl. 102-275.200.

Zaiss, Gerhard: *See—*
Geier, Roland; and Zaiss, Gerhard, 4,424,674, Cl. 60-534.000.

Zeikus, Joseph G.; and Lynd, Lee H., to Wisconsin Alumini Research Foundation. Propagation of microbial cells on single carbon products. 4,425,432, Cl. 435-140.000.

Zeller, Rainer; Belloni, Aldo; and Heisel, Michael, to Linde Aktiengesellschaft. Recycle of hydrogenated sulfur plant tail gas to sour gas scrubbing system. 4,425,317, Cl. 423-574.00R.

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Zgraggen, Martin A.: *See—*
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Ziegenbein, Botho; and Reiss, Harald, to Brown, Boveri & Cie AG. Thermal Insulation. 4,425,413, Cl. 429-112.000.

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Zuckerman, Andrew M.: *See—*
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Zuckerman, Jack M.; and Zuckerman, Andrew M. Reshapable three dimensional plastic garment hanger. 4,424,922, Cl. 223-88.000.

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Zwirn, Robert; and Bozeman, John W., to Hughes Aircraft Company. Tracking system. 4,424,943, Cl. 244-3.110.

ZYTREX Corporation: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ateliers des Charmilles, S.A.: *See*—
Balleys, Francois; and Dupraz, Jean, Re. 31,494, Cl. 219-69.00M.
Pfau, Jean, Re. 31,493, Cl. 219-69.00C.
Wyss, George, Re. 31,490, Cl. 219-69.00V.
Wyss, George, Re. 31,491, Cl. 219-69.00M.
Wyss, George, Re. 31,492, Cl. 219-69.00V.

Balleys, Francois; and Dupraz, Jean, to Ateliers des Charmilles, S.A. Electric discharge machining method and device with preset electrode. Re. 31,494, Cl. 219-69.00M.

Deere & Company: *See*—
Trumbauer, David V., Re. 31,488, Cl. 164-32.000.

Dupraz, Jean: *See*—
Balleys, Francois; and Dupraz, Jean, Re. 31,494, Cl. 219-69.00M.

Friedberg, Martin F. Slide fastener with improved end connections. Re. 31,487, Cl. 24-386.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, Re. 31,489, Cl. 429-191.000.

Ninomiya, Yoshito: *See*—
Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, Re. 31,489, Cl. 429-191.000.

Pfau, Jean, to Ateliers des Charmilles, S.A. Method of machining by eroaive electrical discharges. Re. 31,493, Cl. 219-69.00C.

Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, to Matsushita Electric Industrial Co., Ltd. Solid state lithium-iodine primary battery. Re. 31,489, Cl. 429-191.000.

Sotomura, Tadashi: *See*—
Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, Re. 31,489, Cl. 429-191.000.

Trumbauer, David V., to Deere & Company. Casting methods with composite molded core assembly. Re. 31,488, Cl. 164-32.000.

Wyss, George, to Ateliers des Charmilles, S.A. Device for electrical discharge machining with simultaneous relative advance and cyclic translational movement of the electrodes. Re. 31,490, Cl. 219-69.00V.

Wyss, George, to Ateliers des Charmilles, S.A. Method of electrical discharge machining with simultaneous relative advance and cyclic translational movement of the electrodes. Re. 31,491, Cl. 219-69.00M.

Wyss, George, to Ateliers des Charmilles, S.A. Electrical discharge machining apparatus with simultaneous relative advance and cyclic translational movement of the electrodes. Re. 31,492, Cl. 219-69.00V.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Carroll, Alban D., Jr.; and Schisler, Lee C., to Research Corp. Delayed release nutrients for mushroom culture. B1 3,942,969, 1-10-83, Cl. 71-5.000.

Eichler, Helmut; and Knopf, Franz. Method for electrostatic assistance in printing processes, and printing machines having electrostatic substrate contact pressure. B1 4,208,965, 1-10-83, Cl. 101-426.000.

Knopf, Franz: *See*—
Eichler, Helmut; and Knopf, Franz, B1 4,208,965, Cl. 101-426.000.

Research Corp.: *See*—
Carroll, Alban D., Jr.; and Schisler, Lee C., B1 3,942,969, Cl. 71-5.000.

Schisler, Lee C.: *See*—
Carroll, Alban D., Jr.; and Schisler, Lee C., B1 3,942,969, Cl. 71-5.000.

LIST OF DESIGN PATENTEES

Ainsworth Nominee Pty. Ltd.: *See*—
Heywood, Joseph R., 272,164, Cl. D21-38.000.

AMP Incorporated: *See*—
Casciotti, Albert; and Hollyday, Robert D., 272,145, Cl. D13-24.000.

Anzalone, Antonio. Combined work bench and tool cabinet. 272,111, 1-10-84, Cl. D6-168.000.

Arenas, Frank B. Building structure. 272,192, 1-10-84, Cl. D25-17.000.

Associated Products, Inc.: *See*—
Levine, Noel, 272,129, Cl. D9-415.000.

Bartlett, Stephen, to Minolta Camera Kabushiki Kaisha. Prism cover for SLR cameras. 272,155, 1-10-84, Cl. D16-10.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,141, Cl. D12-192.000.

Beard, Eugene C., to Papercraft Corporation. Packaging container. 272,127, 1-10-84, Cl. D9-312.000.

Becker, Werner, to Easelte Pendaflex Corporation. Handle for a labelling apparatus. 272,160, 1-10-84, Cl. D18-19.000.

Beirise, Jean M.: *See*—
Coons, John C.; and Beirise, Jean M., 272,147, Cl. D14-60.000.
Coons, John C.; and Beirise, Jean M., 272,148, Cl. D14-60.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; and McGarvey, John N., 272,149, Cl. D14-60.000.
Genaro, Donald M.; and McGarvey, John N., 272,150, Cl. D14-60.000.

Birch, Robert A.: *See*—
Lyon, Margaret L.; and Birch, Robert A., 272,117, Cl. D7-27.000.

Boehringer Laboratories: *See*—
Karpowicz, John, 272,184, Cl. D24-17.000.

Bohme, Ulrich: *See*—
Schneider, Wulf; and Bohme, Ulrich, 272,112, Cl. D6-191.000.

Boughton, Matthew S., to Cannondale Corporation. Combined bottle mount and bottle for bicycles. 272,139, 1-10-84, Cl. D12-114.000.

Braun, Hans: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,141, Cl. D12-192.000.

Broomes, Edward L. C. Anti-snoring collar. 272,187, 1-10-84, Cl. D24-34.000.

Brunswick Corporation: *See*—
Hull, R. Dell, 272,174, Cl. D22-25.000.

Brustle, Klaus: *See*—
Rock, Erich; and Brustle, Klaus, 272,114, Cl. D6-194.000.
Rock, Erich; and Brustle, Klaus, 272,123, Cl. D8-323.000.
Rock, Erich; and Brustle, Klaus, 272,124, Cl. D8-323.000.

Campbell, James R. Boot heel protector. 272,104, 1-10-84, Cl. D2-277.000.

Cannondale Corporation: *See*—
Boughton, Matthew S., 272,139, Cl. D12-114.000.

Casciotti, Albert; and Hollyday, Robert D., to AMP Incorporated. Multi-contact electrical connector receptacle. 272,145, 1-10-84, Cl. D13-24.000.

Chastain, James F., Jr. Wood stove. 272,176, 1-10-84, Cl. D23-93.000.

Chatani, Yasushi; and Tsuchikura, Toshio, to Kawada Co., Ltd. Toy block. 272,167, 1-10-84, Cl. D21-108.000.
Cohen & Peck, Inc.: *See*—
Price, Hugh, 272,178, Cl. D23-97.000.
Colemore-Williams, Robin V., to Merryware Industries Limited. Brush. 272,195, 1-10-84, Cl. D28-63.000.
Connecticut Cycle Accessories, Inc.: *See*—
Turkington, Mark; and Turkington, Philip, 272,140, Cl. D12-119.000.
Coons, John C.; and Beirise, Jean M., to Masco Corporation of Indiana. Telephone base station. 272,147, 1-10-84, Cl. D14-60.000.
Coons, John C.; and Beirise, Jean M., to Masco Corporation of Indiana. Telephone base. 272,148, 1-10-84, Cl. D14-60.000.
DeLiso, Alan J. Cental articulator. 272,183, 1-10-84, Cl. D24-10.000.
del Rio, Juan. Flute. 272,159, 1-10-84, Cl. D17-10.000.
Denison, John F.: *See*—
Lodge, Glenn R.; and Denison, John F., 272,161, Cl. D19-33.000.
Dryzal, Donald D. Glove protector. 272,105, 1-10-84, Cl. D2-361.000.
Durand, Jean-Jacques. Tumbler or similar article. 272,116, 1-10-84, Cl. D7-14.000.
Elliott, Quenton T.; and Elliott, Quenton T., Jr. Belt. 272,106, 1-10-84, Cl. D2-385.000.
Elliott, Quenton T.; and Elliott, Quenton T., Jr. Belt. 272,107, 1-10-84, Cl. D2-385.000.
Elliott, Quenton T., Jr.: *See*—
Elliott, Quenton T.; and Elliott, Quenton T., Jr., 272,106, Cl. D2-385.000.
Elliott, Quenton T.; and Elliott, Quenton T., Jr., 272,107, Cl. D2-385.000.
Eltron (London) Limited: *See*—
Varney, Alan J., 272,143, Cl. D13-13.000.
Esselte Pendaflex Corporation: *See*—
Becker, Werner, 272,160, Cl. D18-19.000.
Ethyl Corporation: *See*—
Hayes, Thomas H., 272,131, Cl. D9-434.000.
Hayes, Thomas H., 272,132, Cl. D9-434.000.
Hayes, Thomas H., 272,133, Cl. D9-434.000.
Hayes, Thomas H., 272,134, Cl. D9-434.000.
Hayes, Thomas H., 272,135, Cl. D9-434.000.
Fowler, Paul E.; and Madson, Walter E., to Northwest Environmental Systems, Inc. Fan guard. 272,182, 1-10-84, Cl. D23-164.000.
Fox Valley Instrument Company: *See*—
McKinnon, Donald C.; and Tury, Edward L., 272,136, Cl. D10-80.000.
Gedye, Laurence R., to L.R. & N.R. Gedye Pty. Ltd. Filter housing. 272,175, 1-10-84, Cl. D23-4.000.
Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Telephone stand or similar article. 272,149, 1-10-84, Cl. D14-60.000.
Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Telephone stand or similar article. 272,150, 1-10-84, Cl. D14-60.000.
General Motors Corporation: *See*—
Gierschick, Walter K.; Jenkins, William M., Jr.; and Kesling, Keith, 272,152, Cl. D14-76.000.
Gierschick, Walter K.; Jenkins, William M., Jr.; and Kesling, Keith, to General Motors Corporation. Radio control unit. 272,152, 1-10-84, Cl. D14-76.000.
Gingher, Clair H., Jr., to Gingher, Inc. Scissors. 272,121, 1-10-84, Cl. D8-57.000.
Gingher, Inc.: *See*—
Gingher, Clair H., Jr., 272,121, Cl. D8-57.000.
Hayes, Thomas H., to Ethyl Corporation. Container handle or similar article. 272,131, 1-10-84, Cl. D9-434.000.
Hayes, Thomas H., to Ethyl Corporation. Container handle or similar article. 272,132, 1-10-84, Cl. D9-434.000.
Hayes, Thomas H., to Ethyl Corporation. Container handle or similar article. 272,133, 1-10-84, Cl. D9-434.000.
Hayes, Thomas H., to Ethyl Corporation. Container handle or similar article. 272,134, 1-10-84, Cl. D9-434.000.
Hayes, Thomas H., to Ethyl Corporation. Container handle or similar article. 272,135, 1-10-84, Cl. D9-434.000.
Heywood, Joseph R., to Ainsworth Nominee Pty. Ltd. Poker machine cabinet. 272,164, 1-10-84, Cl. D21-38.000.
Hinrichs, Carl B.: *See*—
Russell, Robert L.; Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 272,113, Cl. D6-192.000.
Hollyday, Robert D.: *See*—
Casciotti, Albert; and Hollyday, Robert D., 272,145, Cl. D13-24.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Oshika, Toshi; and Kurosu, Yukio, 272,137, Cl. D12-91.000.
Hull, R. Dell, to Brunswick Corporation. Closed face spinning reel. 272,174, 1-10-84, Cl. D22-25.000.
Imai, Hirotaka: *See*—
Nomura, Toshihito; and Imai, Hirotaka, 272,151, Cl. D14-71.000.
International Business Machines Corporation: *See*—
Meister, Herbert E., Jr., 272,156, Cl. D16-27.000.
Ishiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 272,138, 1-10-84, Cl. D12-110.000.
Jenkins, William M., Jr.: *See*—
Gierschick, Walter K.; Jenkins, William M., Jr.; and Kesling, Keith, 272,152, Cl. D14-76.000.
Johnson, Perry B. Airplane. 272,142, 1-10-84, Cl. D12-326.000.
Jones, Andrew, Jr. Random chance game device. 272,165, 1-10-84, Cl. D21-39.000.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; and Brustle, Klaus, 272,114, Cl. D6-194.000.
Rock, Erich; and Brustle, Klaus, 272,123, Cl. D8-323.000.
Rock, Erich; and Brustle, Klaus, 272,124, Cl. D8-323.000.
Jutras, Pierre. Tent. 272,172, 1-10-84, Cl. D21-253.000.
Kabushiki Kaisha Matsuzaka Tekkosho: *See*—
Nakamura, Masahiko; and Yokoyama, Takashi, 272,122, Cl. D8-71.000.
Karpowicz, John, to Boehringer Laboratories. Disposable pneumotach tube. 272,184, 1-10-84, Cl. D24-17.000.
Kawada Co., Ltd.: *See*—
Chatani, Yasushi; and Tsuchikura, Toshio, 272,167, Cl. D21-108.000.
Keene Corporation: *See*—
Sangiamo, Richard, 272,193, Cl. D26-85.000.
Kesling, Keith: *See*—
Gierschick, Walter K.; Jenkins, William M., Jr.; and Kesling, Keith, 272,152, Cl. D14-76.000.
Kikuchi, Tadashi: *See*—
Shintani, Takamasa; Nagasawa, Koyo; Takemura, Hiroshi; and Kikuchi, Tadashi, 272,153, Cl. D14-94.000.
Kurosu, Yukio: *See*—
Oshika, Toshi; and Kurosu, Yukio, 272,137, Cl. D12-91.000.
L.R. & N.R. Gedye Pty. Ltd.: *See*—
Gedye, Laurence R., 272,175, Cl. D23-4.000.
Lankford, Jerry G. Chair ride. 272,171, 1-10-84, Cl. D21-247.000.
Leach, Frank D. Woodstove. 272,179, 1-10-84, Cl. D23-97.000.
Levine, Noel, to Associated Products, Inc. Shower curtain and hook package. 272,129, 1-10-84, Cl. D9-415.000.
Lodge, Glenn R.; and Denison, John F., to Wilson Jones Company. Divider sheet for a continuous form binder. 272,161, 1-10-84, Cl. D19-33.000.
Luthe, Claus; Rennen, Manfred; and Braun, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Combined vehicle roof interior instrument panel, rear view mirror and sun visors. 272,141, 1-10-84, Cl. D12-192.000.
Lyon, Margaret L.; and Birch, Robert A. Plate. 272,117, 1-10-84, Cl. D7-27.000.
Madson, Walter E.: *See*—
Fowler, Paul E.; and Madson, Walter E., 272,182, Cl. D23-164.000.
Mars, Incorporated: *See*—
Taub, Ronald H., 272,110, Cl. D6-132.000.
Masco Corporation of Indiana: *See*—
Coons, John C.; and Beirise, Jean M., 272,147, Cl. D14-60.000.
Coons, John C.; and Beirise, Jean M., 272,148, Cl. D14-60.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Sawada, Atsushi; and Nagayama, Shinichi, 272,120, Cl. D7-384.000.
Matsushita Graphic Communication Systems, Inc.: *See*—
Shintani, Takamasa; Nagasawa, Koyo; Takemura, Hiroshi; and Kikuchi, Tadashi, 272,153, Cl. D14-94.000.
Mattarelli, Ennio. Rifle. 272,173, 1-10-84, Cl. D22-6.000.
Mayumi, Hisaki, to Tokai Electric Wire Co., Ltd. Connector housing. 272,144, 1-10-84, Cl. D13-24.000.
McGarvey, John N.: *See*—
Genaro, Donald M.; and McGarvey, John N., 272,149, Cl. D14-60.000.
Genaro, Donald M.; and McGarvey, John N., 272,150, Cl. D14-60.000.
McKinnon, Donald C.; and Tury, Edward L., to Fox Valley Instrument Company. Magnetic timing probe. 272,136, 1-10-84, Cl. D10-80.000.
McPhail, Kenneth J. Vending machine. 272,162, 1-10-84, Cl. D20-7.000.
Meister, Herbert E., Jr., to International Business Machines Corporation. Automatic sheet feed device or the like. 272,156, 1-10-84, Cl. D16-27.000.
Merryware Industries Limited: *See*—
Colemore-Williams, Robin V., 272,195, Cl. D28-63.000.
Minolta Camera Kabushiki Kaisha: *See*—
Bartlett, Stephen, 272,155, Cl. D16-10.000.
Miyazaki, Tamio. Container for food or the like. 272,130, 1-10-84, Cl. D9-431.000.
Mo, Michael. Telephone instrument. 272,146, 1-10-84, Cl. D14-53.000.
Morris, James W., Jr. Combined stationary table and rotatable lounge seating unit. 272,108, 1-10-84, Cl. D6-42.000.
Nagasawa, Koyo: *See*—
Shintani, Takamasa; Nagasawa, Koyo; Takemura, Hiroshi; and Kikuchi, Tadashi, 272,153, Cl. D14-94.000.
Nagayama, Shinichi: *See*—
Sawada, Atsushi; and Nagayama, Shinichi, 272,120, Cl. D7-384.000.
Nakamura, Masahiko; and Yokoyama, Takashi, to Kabushiki Kaisha Matsuzaka Tekkosho. Foot operated vice. 272,122, 1-10-84, Cl. D8-71.000.
Noller, Donna J. Horse barrel swing or similar article. 272,170, 1-10-84, Cl. D21-246.000.
Nomura, Toshihito; and Imai, Hirotaka, to Pioneer Electronic Corporation. Audio tuner. 272,151, 1-10-84, Cl. D14-71.000.
Northwest Environmental Systems, Inc.: *See*—
Fowler, Paul E.; and Madson, Walter E., 272,182, Cl. D23-164.000.
Nottingham, John R.; and Spirk, John W., Jr. Simulative toy table or similar article. 272,169, 1-10-84, Cl. D21-121.000.
Orenstein, Henry. Riding toy. 272,166, 1-10-84, Cl. D21-78.000.
Orenstein, Henry. Makeup console. 272,197, 1-10-84, Cl. D28-99.000.
Oshika, Toshi; and Kurosu, Yukio, to Honda Giken Kogyo Kabushiki Kaisha. Motorcar. 272,137, 1-10-84, Cl. D12-91.000.

Papercraft Corporation: *See*—
Beard, Eugene C., 272,127, Cl. D9-312.000.
Parmentier, Christian. Packaging container for ice cream or the like. 272,128, 1-10-84, Cl. D9-345.000.
Peck, Russell E. Tourniquet and pressure applying device. 272,186, 1-10-84, Cl. D24-34.000.
Pennoyer, Raymond P., Jr. Pulley. 272,126, 1-10-84, Cl. D8-360.000.
Pioneer Electronic Corporation: *See*—
Nomura, Toshihito; and Imai, Hirotaka, 272,151, Cl. D14-71.000.
Plasticair Systems: *See*—
Sixsmith, Richard, 272,181, Cl. D23-163.000.
Price, Hugh, to Cohen & Peck, Inc. Wood stove. 272,178, 1-10-84, Cl. D23-97.000.
Prieur, Henri, to Societe Francaise des Verreries Mechaniques Champenoises. Goblet or similar article. 272,115, 1-10-84, Cl. D7-13.000.
Propst, Paul L.: *See*—
Russell, Robert L.; Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 272,113, Cl. D6-192.000.
Raymond, Gary E. Copying camera/processor unit. 272,157, 1-10-84, Cl. D16-28.000.
Rennen, Manfred: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,141, Cl. D12-192.000.
Richardson, Donald A.: *See*—
Russell, Robert L.; Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 272,113, Cl. D6-192.000.
Ricoh Company, Ltd.: *See*—
Saito, Yasuhiro, 272,154, Cl. D14-111.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Mounting plate for a hinge. 272,114, 1-10-84, Cl. D6-194.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Hinge arm. 272,123, 1-10-84, Cl. D8-323.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Furniture hinge arm. 272,124, 1-10-84, Cl. D8-323.000.
Russell, Robert L.; Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., to Stow Davis Furniture Company. Furniture panel. 272,113, 1-10-84, Cl. D6-192.000.
Russo Manufacturing Corporation: *See*—
Russo, Richard A., 272,180, Cl. D23-97.000.
Russo, Richard A., to Russo Manufacturing Corporation. Stove. 272,180, 1-10-84, Cl. D23-97.000.
Saferstein, Albert; and Spector, Gilbert. Penlight magnifier attachment. 272,158, 1-10-84, Cl. D16-135.000.
Saito, Yasuhiro, to Ricoh Company, Ltd. Printer. 272,154, 1-10-84, Cl. D14-111.000.
Sangiamo, Richard, to Keene Corporation. Wall mounted light fixture. 272,193, 1-10-84, Cl. D26-85.000.
Sanyei Corporation: *See*—
Suzuki, Sigeru, 272,194, Cl. D28-16.000.
Sawada, Atsushi; and Nagayama, Shinichi, to Matsushita Electric Industrial Co., Ltd. Food processor. 272,120, 1-10-84, Cl. D7-384.000.
Schlesinger, Joseph D. Petri dish. 272,185, 1-10-84, Cl. D24-29.000.
Schneider, Wulf; and Bohme, Ulrich. Chair frame. 272,112, 1-10-84, Cl. D6-191.000.
Schuller, Marius C. Solid fuel stove. 272,177, 1-10-84, Cl. D23-97.000.
Shames, Harold: *See*—
Shames, Sidney J.; and Shames, Harold, 272,109, Cl. D6-92.000.
Shames, Sidney J.; and Shames, Harold. Combined tumbler and toothbrush fixture. 272,109, 1-10-84, Cl. D6-92.000.
Shintani, Takamasa; Nagasawa, Koyo; Takemura, Hiroshi; and Kikuchi, Tadashi, to Matsushita Graphic Communication Systems, Inc. Facsimile transceiver. 272,153, 1-10-84, Cl. D14-94.000.
Sielaff, Ulrich. Playhouse. 272,168, 1-10-84, Cl. D21-114.000.
Sixsmith, Richard, to Plasticair Systems. Mist eliminator blade. 272,181, 1-10-84, Cl. D23-163.000.
Sneider, Vincent R. Disposable panty pad. 272,188, 1-10-84, Cl. D24-51.000.
Sneider, Vincent R. Disposable panty pad. 272,189, 1-10-84, Cl. D24-51.000.
Sneider, Vincent R. Disposable panty pad. 272,190, 1-10-84, Cl. D24-51.000.
Societe Francaise des Verreries Mechaniques Champenoises: *See*—
Prieur, Henri, 272,115, Cl. D7-13.000.
Spector, Gilbert: *See*—
Saferstein, Albert; and Spector, Gilbert, 272,158, Cl. D16-135.000.
Spirk, John W., Jr.: *See*—
Nottingham, John R.; and Spirk, John W., Jr., 272,169, Cl. D21-121.000.
Steiner, Fred S. Skimmer. 272,118, 1-10-84, Cl. D7-47.000.
Steiner, Fred S. Turner. 272,119, 1-10-84, Cl. D7-102.000.
Stow Davis Furniture Company: *See*—
Russell, Robert L.; Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 272,113, Cl. D6-192.000.
Suzuki, Sigeru, to Sanyei Corporation. Hair dryer. 272,194, 1-10-84, Cl. D28-16.000.
Takemura, Hiroshi: *See*—
Shintani, Takamasa; Nagasawa, Koyo; Takemura, Hiroshi; and Kikuchi, Tadashi, 272,153, Cl. D14-94.000.
Takizawa, Toshiaki, to Tomy Kogyo Co., Inc. Hand holdable housing for a game. 272,163, 1-10-84, Cl. D21-13.000.
Taub, Ronald H., to Mars, Incorporated. Display shelf module. 272,110, 1-10-84, Cl. D6-132.000.
Tawada, Shinryo. Dental floss holder or similar article. 272,196, 1-10-84, Cl. D28-64.000.
Tetra Consultants, Inc.: *See*—
Van Ewyk, William H., 272,191, Cl. D24-62.000.
Tokai Electric Wire Co., Ltd.: *See*—
Mayumi, Hisaki, 272,144, Cl. D13-24.000.
Tomy Kogyo Co., Inc.: *See*—
Takizawa, Toshiaki, 272,163, Cl. D21-13.000.
Tsuchikura, Toshio: *See*—
Chatani, Yasushi; and Tsuchikura, Toshio, 272,167, Cl. D21-108.000.
Turkington, Mark; and Turkington, Philip, to Connecticut Cycle Accessories, Inc. Combined backrest and luggage rack. 272,140, 1-10-84, Cl. D12-119.000.
Turkington, Philip: *See*—
Turkington, Mark; and Turkington, Philip, 272,140, Cl. D12-119.000.
Tury, Edward L.: *See*—
McKinnon, Donald C.; and Tury, Edward L., 272,136, Cl. D10-80.000.
Van Doren, David A. Combination rebar support and nailing block. 272,125, 1-10-84, Cl. D8-356.000.
Van Ewyk, William H., to Tetra Consultants, Inc. Nasal aspiration device. 272,191, 1-10-84, Cl. D24-62.000.
Varney, Alan J., to Eltron (London) Limited. Electrical terminal box. 272,143, 1-10-84, Cl. D13-13.000.
Vermillion, Wesley: *See*—
Webb, Gary S.; and Vermillion, Wesley, 272,198, Cl. D30-99.000.
Webb, Gary S.; and Vermillion, Wesley. Pet litter tray. 272,198, 1-10-84, Cl. D30-99.000.
Wilson Jones Company: *See*—
Lodge, Glenn R.; and Denison, John F., 272,161, Cl. D19-33.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ishiyama, Atsushi, 272,138, Cl. D12-110.000.
Yokoyama, Takashi: *See*—
Nakamura, Masahiko; and Yokoyama, Takashi, 272,122, Cl. D8-71.000.

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Moore, James N., 5,174, Cl. 47.000.
Carrier, Leonard E. Carnation plant. 5,175, 1-10-84, Cl. 71.000.
DeVor Nurseries, Inc.: *See*—
DeVor, Thelma G., 5,172, Cl. 23.000.
DeVor, Thelma G., to DeVor Nurseries, Inc. Rose plant named De Vite. 5,172, 1-10-84, Cl. 23.000.
Hansen, Betty C., heir: *See*—
Hansen, Carl J., deceased, 5,173, Cl. 30.000.
Hansen, Carl J., deceased (by Hansen, Betty C., heir), to University of California, The Regents of the. Almond×Peach hybrid rootstock tree. 5,173, 1-10-84, Cl. 30.000.
Moore, James N., to Arkansas Agricultural Experiment Station, University of Arkansas. Grapevine—Reliance cultivar. 5,174, 1-10-84, Cl. 47.000.
University of California, The Regents of the: *See*—
Hansen, Carl J., deceased, 5,173, Cl. 30.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 10, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

18 4,424,595
240 4,424,596

CLASS 3

13 4,424,597

CLASS 4

524 4,424,598

CLASS 5

436 4,424,599
470 4,424,600

CLASS 7

113 4,424,601

CLASS 8

115.6 4,425,131
405 4,425,132
437 4,425,133
524 4,425,134

CLASS 15

97 B 4,424,602
210 R 4,424,603

CLASS 16

29 4,424,604
94 R 4,424,605
223 4,424,606
387 4,424,607

CLASS 17

52 4,424,608

CLASS 24

134 R 4,424,609
163 K 4,424,610
192 4,424,611
386 Re.31,487
669 4,424,612

CLASS 26

2 R 4,424,613

CLASS 28

255 4,424,614

CLASS 29

25.42 4,424,615
4,424,617
33 T 4,424,616
509 4,424,618
527.4 4,424,619
558 4,424,620
571 4,424,621
611 4,424,622
716 4,424,623
727 4,424,624
764 4,424,625
839 4,424,626
857 4,424,627

CLASS 30

43.92 4,424,628
105 4,424,629

CLASS 33

174 L 4,424,630
361 4,424,631

CLASS 34

57 R 4,424,632
75 4,424,633
167 4,424,634

CLASS 36

34 A 4,424,635
50 4,424,636

CLASS 40

152 4,424,637

CLASS 42

69 R 4,424,638

CLASS 43

18.1 4,424,639
58 4,424,640
102 4,424,641
114 4,424,642

CLASS 44

51 4,425,135
4,425,136
56 4,425,137
58 4,425,138

CLASS 46

86 R 4,424,643
135 R 4,424,644

CLASS 47

66 4,424,645

CLASS 48

77 4,425,139
180 C 4,425,140

CLASS 49

141 4,424,646
502 4,424,647

CLASS 51

1 4,424,648
92 R 4,424,649
309 4,425,141

CLASS 52

96 4,424,650
175 4,424,651
204 4,424,652
213 4,424,653
239 4,424,654
520 4,424,655
584 4,424,656

CLASS 53

111 R 4,424,657
398 4,424,658
425 4,424,659
540 4,424,660

CLASS 55

25 4,425,142
31 4,425,143
96 4,425,144
385 B 4,425,145

CLASS 56

320.2 4,424,661
341 4,424,662

CLASS 57

22 4,424,663
338 4,424,664

CLASS 60

39.02 4,424,665
39.141 4,424,666
39.181 4,424,667
39.182 4,424,668
230 4,424,669
231 4,424,670
251 4,424,679
274 4,424,671
385 4,424,672
486 4,424,673
534 4,424,674
602 4,424,675
605 4,424,676
660 4,424,677
670 4,424,678

CLASS 62

48 4,424,680
114 4,424,681
133 4,424,682
135 4,424,683
239 4,424,684
249 4,424,685
259.1 4,424,686
457 4,424,687
476 4,424,688

CLASS 63

15.1 4,424,689

CLASS 65

18.2 4,425,146
27 4,425,147
142 4,425,148

CLASS 69

30 4,424,690

CLASS 70

224 4,424,691
363 4,424,692
369 4,424,693
422 4,424,694
716- B1 3,942,969
24 4,425,149
77 4,425,150
88 4,425,151
91 4,425,152
92 4,425,153
4,425,154
93 4,425,155
94 4,425,156
4,425,157
121 4,425,158

CLASS 72

128 4,424,695
273.5 4,424,696
309 4,424,697
354 4,424,698
388 4,424,699

CLASS 73

1 E 4,424,700
24 4,424,701
4,424,702
4,424,703
35 4,424,704
4,424,705
4,424,706
38 4,424,707
40 4,424,708
117.3 4,424,709
172 4,424,710
462 4,424,711
514 4,424,712
718 4,424,713
861.22 4,424,714
861.28 4,424,715
861.56 4,424,716
862.65 4,424,717

CLASS 74

87 4,424,718
89.15 4,424,719
4,424,720
422 4,424,722
482 4,424,723
493 4,424,721
540 4,424,724
650 4,424,725
796 4,424,726

CLASS 75

29 4,425,159
63 4,425,160

CLASS 76

107 R 4,424,727

CLASS 81

177 A 4,424,728
451 4,424,729

CLASS 84

1.01 4,424,730
1.17 4,424,732
1.26 4,424,731

CLASS 89

1.5 R 4,424,733
16 4,424,734
34 4,424,735
36 D 4,424,736

CLASS 91

396 4,424,737
422 4,424,738

CLASS 92

105 4,424,739

CLASS 100

52 4,424,740
53 4,424,741
229 R 4,424,742

CLASS 101

99 4,424,743
349 4,424,744
426 B1 4,208,965

CLASS 102

215 4,424,745
254 4,424,746
275.2 4,424,747
523 4,424,748

CLASS 104

172 S 4,424,749

CLASS 105

206 R 4,424,750
447 4,424,751

CLASS 106

21 4,425,161
22 4,425,162
100 4,425,163
150 4,425,164
193 R 4,425,165
286.2 4,425,166
287.17 4,425,167

CLASS 108

51.1 4,424,752
4,424,753

CLASS 110

190 4,424,754
246 4,424,755
332 4,424,756

CLASS 111

7 4,424,757

CLASS 112

103 4,424,758

CLASS 114

97 4,424,759
363 4,424,760

CLASS 118

300 4,424,761
410 4,424,762

CLASS 119

1 4,424,763
96 4,424,764

CLASS 122

4 D 4,424,765
4,424,766
13 A 4,424,767
16 4,424,768
392 4,424,769
488 4,424,770

CLASS 123

3 4,424,771
65 VB 4,424,772
90.29 4,424,773
90.56 4,424,774
142.5 R 4,424,775
4,424,776
188 VA 4,424,777
196 AB 4,424,778
237 4,424,779
255 4,424,780
342 4,424,781
367 4,424,782
418 4,424,783
438 4,424,784
479 4,424,785
538 4,424,786
549 4,424,787
557 4,424,788
4,424,789
559 4,424,790

CLASS 124

35 A 4,424,791

CLASS 126

80 4,424,792
110 B 4,424,793
123 4,424,794
237 4,424,795
247 4,424,796
4,424,797
262 4,424,798
289 4,424,799
419 4,424,800
425 4,424,801
4,424,802
429 4,424,803
430 4,424,804
452 4,424,805

CLASS 128

28 4,424,806
79 4,424,807
156 4,424,808
165 4,424,809
326 4,424,810
346 4,424,811
419 PG 4,424,812
660 4,424,813
663 4,424,814
715 4,424,815
731 4,424,816
766 4,424,817

CLASS 131

336 4,424,819

CLASS 132

7 4,424,820
40 4,424,821
46 A 4,424,822

CLASS 134

45 4,424,823

CLASS 135

20 M 4,424,824

CLASS 137

1 4,424,825
54 4,424,826
320 4,424,827
342 4,424,828
590 4,424,829
613 4,424,830
627.5 4,424,831
844 4,424,832
849 4,424,833

CLASS 138

121 4,424,834

CLASS 139

1 E 4,424,835
13 R 4,424,836

CLASS 141

284 4,424,837
325 4,424,838
348 4,424,839

CLASS 144

246 F 4,424,840

CLASS 148

2 4,425,168
137 4,425,169

CLASS 149

109.6 4,425,170

CLASS 150

33 4,424,841

CLASS 152

158 4,424,842
209 R 4,424,843
4,424,844
4,424,845
4,424,846
352 R 4,424,847

CLASS 156

64 4,425,171
187 4,425,172
204 4,425,173
218 4,425,174
229 4,425,175
244.11 4,425,176
272.2 4,425,177
307.3 4,425,178
307.5 4,425,179
415 4,425,180
497 4,425,181
554 4,425,182
651 4,425,183
655 4,425,184
656 4,425,185

CLASS 157

1.28 4,424,848

CLASS 160

124 4,424,849
133 4,424,850
298 4,424,851
309 4,424,852

CLASS 162

158 4,425,186
299 4,425,187
300 4,425,188
352 4,425,189
358 4,425,190

CLASS 164

32 Re.31,488
57.1 4,424,853
98 4,424,854
485 4,424,855
504 4,424,856

CLASS 165

1 4,424,857

CLASS 166

52 4,424,858
67 4,424,859
113 4,424,860
120 4,424,861
168 4,424,862
268 4,424,863
278 4,424,864
302 4,424,865
303 4,424,866

CLASS 169

43 4,424,867

CLASS 172

21 4,424,868
349 4,424,869
810 4,424,870
821 4,424,871

CLASS 174

110 F 4,425,474
117 F 4,425,475
152 GM 4,425,476

CLASS 178

784 4,424,818

CLASS 179

2 B 4,425,477
18 BC 4,425,478
81 B 4,425,479
90 D 4,425,480
107 FD 4,425,481
120 4,425,482
170.2 4,425,483

CLASS 180

24.02 4,424,872
65 E 4,424,873
70 R 4,424,874
168 4,424,875
175 4,424,876
210 4,424,877
235 4,424,878
255 4,424,879

CLASS 181

129 4,424,880
155 4,424,881
231 4,424,882
258 4,424,883

CLASS 182

12 4,424,884

CLASS 188

22 4,424,885
73.35 4,424,886
264 P 4,424,887
331 4,424,888

CLASS 191

39 4,424,889

CLASS 192

111 A 4,424,890

CLASS 193

2 R 4,424,891

CLASS 194

1 D 4,424,892
4 C 4,424,893

CLASS 198

451 4,424,894
472 4,424,895
545 4,424,896

CLASS 200

5 A 4,425,484
19 R 4,425,485
51 R 4,425,486
153 K 4,425,487
220 4,425,488

CLASS 201

41 4,425,191

CLASS 204

1 T 4,425,193
2.1 4,425,192
4,425,194
3 4,425,195
15 4,425,196
19 ZE 4,425,210
25 4,425,197
43 Z 4,425,198
59 F 4,425,199
67 4,425,200
4,425,201
72 4,425,202
129 4,425,203
129.7 4,425,204
151 4,425,205
159.14 4,425,207
159.15 4,425,208
159.18 4,425,206
159.23 4,425,209
198 4,425,211
202 4,425,212
4,425,213
254 4,425,214
258 4,425,215
270 4,425,216
290 F 4,425,217
298 4,425,218

CLASS 206

45.14 4,424,897
63.3 4,424,898
305 4,424,899
328 4,424,900
434 4,424,901
454 4,424,902
525 4,424,903

CLASS 208

8 R 4,425,219
11 R 4,425,220
48 AA 4,425,223
56 4,425,224
65 4,425,222
216 R 4,425,221
252 4,425,225
307 4,425,226

CLASS 209

5 4,425,227
17 4,425,228
167 4,425,229
4,425,230

CLASS 210

96.1 4,425,231
219 4,425,232
231 4,425,233
321.3 4,425,234
516 4,425,235
638 4,425,236
666 4,425,238
692 4,425,237
787 4,425,239
801 4,425,240

CLASS 211

40 4,424,904
49 R 4,424,905
50 4,424,906
60 R 4,424,907
118 4,424,908

CLASS 212

153 4,424,909

CLASS 215

216 4,424,910
365 4,424,911

CLASS 217

122 4,424,912

CLASS 219

10.49 A 4,425,489
10.55 B 4,425,490
60.2 4,425,491
69 C Re.31,493
69 M Re.31,491
Re.31,494
4,425,492
69 V Re.31,490
Re.31,492

130.51 4,425,493
216 4,425,494
267 4,425,495
284 4,425,496
544 4,425,497

CLASS 220

90.2 4,424,913
261 4,424,914
316 4,424,915

CLASS 222

74 4,424,916
103 4,424,917
153 4,424,918
4,424,919
402.11 4,424,920
456 4,424,921

CLASS 223

88 4,424,922

CLASS 224

251 4,424,923
252 4,424,924

CLASS 225

2 4,424,925
26 4,424,926

CLASS 226

199 4,424,927

CLASS 227

28 4,424,928
32 4,424,929

CLASS 228

20 4,424,930
180 R 4,424,931

CLASS 231

2 E 4,424,932

CLASS 235

1 A 4,425,498
70 R 4,425,499
400 4,425,500

CLASS 236

44 A 4,424,933

CLASS 237

7 4,424,934

CLASS 238

349 4,424,935

CLASS 239

271 4,424,936
590 4,424,937

CLASS 241

182 4,424,938

CLASS 242

4 R 4,424,939
191 4,424,940
192 4,424,941
200 4,424,942

CLASS 244

3.11 4,424,943
13 4,424,945
4,424,946
134 D 4,424,947
166 4,424,948

CLASS 248

238 4,424,949
475 R 4,424,950

CLASS 249

3.13 4,424,944
48 4,424,951

CLASS 250

216 4,425,501
338 4,425,502
345 4,425,503
353 4,425,504
359.1 4,425,505
396 ML 4,425,506
442.1 4,425,507
4,425,508

CLASS 251

54 4,424,952
368 4,424,953

CLASS 252

8.5 C 4,425,241
4,425,243
8.55 D 4,425,246
8.55 R 4,425,242
12 4,425,247
28 4,425,244
33 4,425,245
49.3 4,425,248

51.5 R 4,425,249
62.59 4,425,250
70 4,425,251
88 4,425,252
135 4,425,253
373 4,425,254
511 4,425,262
4,425,263
522 R 4,425,264
4,425,265
548 4,425,266
607 4,425,267

CLASS 254

134.3 CL 4,424,954

CLASS 260

112.5 R 4,425,269
153 4,425,270
192 4,425,271
245.6 4,425,272
397.1 4,425,274
397.25 4,425,275
403 4,425,276
410.9 N 4,425,277
429 R 4,425,278
4,425,279
429.9 4,425,280
430 4,425,281
465 D 4,425,282
502.5 F 4,425,283
4,425,284

CLASS 261

95 4,425,285

CLASS 262

397.1 4,425,273

CLASS 264

8 4,425,286
22 4,425,287
39 4,425,288
40.1 4,425,289
4,425,290
42 4,425,291
174 4,425,292
176 F 4,425,293
525 4,425,294

CLASS 266

44 4,424,955
248 4,424,956
4,424,957
271 4,424,958
283 4,424,959

CLASS 267

8 R 4,424,960
64.27 4,424,961
140.2 4,424,962

CLASS 270

53 4,424,963

CLASS 271

91 4,424,964
202 4,424,965
302 4,424,966

CLASS 273

1 GC 4,424,967
1.5 R 4,424,968
55 B 4,424,969
121 A 4,424,970
153 S 4,424,971
397 4,424,972

CLASS 277

2 4,424,973
80 4,424,974
81 R 4,424,975
205 4,424,976

CLASS 279

121 4,424,977

CLASS 280

1.13 4,424,978
21 R 4,424,979
276 4,424,980
288 4,424,981
461 A 4,424,982
475 4,424,983
661 4,424,984
766.1 4,424,985
784 4,424,986
823 4,424,987

CLASS 285

2 4,424,988
14 4,424,989
381 4,424,990
4,424,991

CLASS 289

2 4,424,992

CLASS 290

40 C 4,425,509
42 4,425,510

CLASS 292

128 4,424,993
318 4,424,994
323 4,424,995

CLASS 293

117 4,424,996

CLASS 294

53.5 4,424,997
118 4,424,998
142 4,424,999
165 4,425,000

CLASS 296

178 4,425,001

CLASS 298

1 R 4,425,002

CLASS 299

5 4,425,003

CLASS 301

8 4,425,004

CLASS 303

3 4,425,005
4,425,006

CLASS 305

11 4,425,007
24 4,425,008

CLASS 307

106 4,425,511
138 4,425,512
141.4 4,425,513
265 4,425,514
268 4,425,515
446 4,425,516
473 4,425,517
571 4,425,518

CLASS 308

187.1 4,425,009
214 4,425,011
227 4,425,010

CLASS 310

45 4,425,519
92 4,425,520
214 4,425,521
258 4,425,523
268 4,425,522
332 4,425,524
336 4,425,525
800 4,425,526

CLASS 312

37 4,425,012
216 4,425,013
284 4,425,014

CLASS 313

112 4,425,527
466 4,425,528

CLASS 315

5.41 4,425,529
104 4,425,530
241 P 4,425,531
360 4,425,532
408 4,425,533

CLASS 318

135 4,425,534
139 4,425,535
439 4,425,536
640 4,425,537
696 4,425,538
771 4,425,539

CLASS 322

2 A 4,425,540

CLASS 324

51 4,425,541
58 R 4,425,542
83 R 4,425,543
158 D 4,425,544
202 4,425,545
230 4,425,546
318 4,425,547

CLASS 328

162 4,425,548

CLASS 329

161 4,425,549

CLASS 330

107 4,425,550
261 4,425,551

CLASS 331

39 4,425,552
74 4,425,553

CLASS 333

195 4,425,554
202 4,425,555

CLASS 338

25 4,425,556
32 H 4,425,557

CLASS 339

17 LC 4,425,015
82 4,425,016
96 4,425,017
198 GA 4,425,018
198 R 4,425,019
264 R 4,425,020
275 T 4,425,021

CLASS 340

58 4,425,558
74 4,425,560
347 AD 4,425,561
347 DD 4,425,562
644 4,425,563
747 4,425,559
825.79 4,425,564

CLASS 343

373 4,425,567
722 4,425,565
781 P 4,425,566

CLASS 346

76 PH 4,425,568
4,425,569
135.1 4,425,570
136 4,425,571

CLASS 350

1.7 4,425,022
96.14 4,425,023
4,425,024
96.26 4,425,025
295 4,425,026
331 T 4,425,027
337 4,425,028
338 4,425,029
339 R 4,425,030

CLASS 354

403 4,425,031
423 4,425,033
458 4,425,032

CLASS 355

3 BE 4,425,034
3 CH 4,425,035
3 DR 4,425,036
43 4,425,037
73 4,425,038

CLASS 356

35.5 4,425,039
350 4,425,040
375 4,425,042
4,425,043

CLASS 357

4 4,425,572
22 4,425,573
50 4,425,574
81 4,425,575

CLASS 358

21 V 4,425,576
55 4,425,577
84 4,425,578
86 4,425,579
111 4,425,580
148 4,425,581
260 4,425,582
322 4,425,583
328 4,425,584
4,425,585
335 4,425,586
4,425,587
340 4,425,588

CLASS 360

51 4,425,589
71 4,425,590
88 4,425,591
99 4,425,592
113 4,425,593
129 4,425,594
137 4,425,595

CLASS 361

93 4,425,596
172 4,425,597
361 4,425,598

CLASS 362

32 4,425,599
84 4,425,600

146 4,425,601
186 4,425,602
222 4,425,603
223 4,425,604
227 4,425,605
267 4,425,606
4,425,607
291 4,425,608
373 4,425,609
419 4,425,610

CLASS 363

21 4,425,611
4,425,612
26 4,425,613

CLASS 364

158 4,425,614
200 4,425,615
4,425,616
4,425,617
300 4,425,618
405 4,425,619
424.1 4,425,620
426 4,425,621
4,425,622
786 4,425,623
802 4,425,624
900 4,425,625
4,425,626
4,425,627
4,425,628
4,425,629
4,425,630

CLASS 365

185 4,425,631
189 4,425,632
194 4,425,633
371 4,425,041

CLASS 366

79 4,425,044

CLASS 367

120 4,425,634
125 4,425,635

CLASS 369

44 4,425,636
124 4,425,637
265 4,425,638

CLASS 370

50 4,425,639
58 4,425,640
64 4,425,641
76 4,425,642

CLASS 371

20 4,425,643
40 4,425,644
47 4,425,645
61 4,425,646
70 4,425,647

CLASS 372

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20 4,425,648
46 4,425,650
61 4,425,651
69 4,425,652
70 4,425,653
86 4,425,654
101 4,425,655

CLASS 373

74 4,425,656
93 4,425,657
103 4,425,658
108 4,425,659
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